

THE
WORKS
OF
SIR WILLIAM JONES.

WITH
THE LIFE OF THE AUTHOR,
BY
LORD TEIGNMOUTH.

IN THIRTEEN VOLUMES.

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THE DESIGN
OF
A TREATISE
ON
THE PLANTS OF INDIA.
BY THE PRESIDENT.

THE greatest, if not the only, obstacle to the progress of knowledge in these provinces, except in those branches of it, which belong immediately to our several professions, is our want of leisure for general researches; and as ARCHIMEDES, who was happily master of his time, had not *space* enough to move the greatest weight with the smallest force, thus we, who have ample space for our inquiries, really want *time* for the pursuit of them. "Give me a place to stand on, said the great mathematician, and I will move the whole earth." Give us time, we may say, for our investigations, and we will transfer to Europe all the sciences, arts, and literature of Asia. "Not to have despaired," however, was thought a degree of merit

in the *Roman* general, even though he was defeated; and, having some hope, that others may occasionally find more leisure, than it will ever, at least in this country, be my lot to enjoy, I take the liberty to propose a work, from which very curious information, and possibly very solid advantage, may be derived.

Some hundreds of plants, which are yet imperfectly known to *European* botanists, and with the virtues of which they are wholly unacquainted, grow wild on the plains and in the forests of *India*: the *Amarcôsh*, an excellent vocabulary of the *Sanâcrit* language, contains in one chapter the names of about three hundred medicinal vegetables; the *Médirî* may comprise many more; and the *Dravyâbhidhâna*, or *Dictionary of Natural Productions*, includes, I believe, a far greater number; the properties of which are distinctly related in medical tracts of approved authority. Now the first step, in compiling a treatise on the plants of *India*, should be to write their true names in *Roman* letters, according to the most accurate orthography, and in *Sanâcrit* preferably to any vulgar dialect; because a learned language is fixed in books, while popular idioms are in constant fluctuation, and will not, perhaps, be understood a century hence by the inhabitants of these *Indian* territories, whom future botanists

may consult on the common appellations of trees and flowers: the childish denominations of plants from the persons, who first described them, ought wholly to be rejected; for *Champaca* and *Hinna* seem to me, not only more elegant, but far properer, designations of an *Indian* and an *Arabian* plant, than *Michelia* and *Lawsonia*; nor can I see without pain, that the great *Swedish* botanist considered it as *the supreme and only reward of labour* in this part of natural history, to preserve a name by hanging it on a blossom, and that he declared this mode of promoting and adorning botany, worthy of being *continued with holy reverence*, though so high an honour, he says, *ought to be conferred with chaste reserve, and not prostituted for the purpose of conciliating the good will, or eternizing the memory, of any but his chosen followers; no, not even of saints*: his list of *an hundred and fifty* such names clearly shows, that his excellent works are the true basis of his just celebrity, which would have been feebly supported, by the stalk of the *Linnaea*. From what proper name the *Plantain* is called *Musa*, I do not know; but it seems to be the *Dutch* pronunciation of the *Arabick* word for that vegetable, and ought not, therefore, to have appeared in his list, though, in my opinion, it is the only rational name in the muster-roll. As to, the

system of LINNÆUS, it is the system of Nature, subordinate indeed to the beautiful arrangement of *natural orders*, of which he has given a rough sketch, and which may hereafter, perhaps, be completed: but the distribution of vegetables into *classes*, according to the number, length, and position of the stamens and pistils, and of those *classes* into *kinds* and *species*, according to certain marks of discrimination, will ever be found the clearest and most convenient of methods, and should therefore be studiously observed in the work, which I now suggest; but I must be forgiven, if I propose to reject the *Linnean* appellations of the twenty-four *classes*, because, although they appear to be *Greek*, (and, if they really were so, that alone might be thought a sufficient objection) yet in truth they are not *Greek*, nor even formed by analogy to the language of *Grecians*; for *Polygamos*, *Monandros*, and the rest of that form, are both masculine and feminine; *Polyandria*, in the abstract, never occurs, and *Polyandrium* means a publick cemetery; *diæcia* and *diæcus* are not found in books of authority; nor, if they were, would they be derived from *dis*, but from *dia*, which would include the *triæcia*; let me add, that the *twelfth* and *thirteenth* classes are ill distinguished by their appellations, independently of other exceptions to them, since

the real distinction between them consists not so much in the *number* of their stamens, as in the *place*, where they are inserted; and that the *fourteenth* and *fifteenth* are not more accurately discriminated by two words formed in defiance of grammatical analogy, since there are but *two* powers, or two *diversities of length*, in each of those classes. *Calycopolyandros* might, perhaps, not inaccurately denote a flower of the *twelfth* class; but such a compound would still favour of barbarism or pedantry; and the best way to amend such a system of words is to efface it, and supply its place by a more simple nomenclature, which may easily be found. Numerals may be used for the *eleven* first classes, the former of two numbers being always appropriated to the *stamens*, and the latter, to the *pistils*: short phrases, as, *on the calyx or calice, in the receptacle, two long, four long, from one base, from two, or many, bases, with anthers connected, on the pistils, in two flowers, in two distinct plants, mixed, concealed*, or the like, will answer every purpose of discrimination; but I do not offer this as a perfect substitute for the words, which I condemn. The allegory of *sexes* and *nuptials*, even if it were complete, ought, I think, to be discarded, as unbecoming the gravity of men, who, while they search for truth, have no busi-

ness to inflame their imaginations; and, while they profess to give descriptions, have nothing to do with metaphors: few passages in *Aloisia*, the most impudent book ever composed by man, are more wantonly indecent than the hundred-forty-sixth number of the *Botanical Philosophy*, and the broad comment of its grave author, who dares, like OCTAVIUS in his epigram, to speak with Roman simplicity; nor can the *Linnean* description of the *Arum*, and many other plants, be read in *English* without exciting ideas, which the occasion does not require. Hence it is, that no well-born and well-educated woman can be advised to amuse herself with botany, as it is now explained, though a more elegant and delightful study, or one more likely to assist and embellish other female accomplishments, could not possibly be recommended.

When the *Sanscrit* names of the *Indian* plants have been correctly written in a large paper-book, one page being appropriated to each, the fresh plants themselves, procured in their respective seasons, must be concisely, but accurately, classed and described; after which their several uses in medicine, diet, or manufactures, may be collected, with the assistance of *Hindu* physicians, from the medical books in *Sanscrit*,

and their accounts either disproved or established by repeated experiments, as fast as they can be made with exactness.

By way of example, I annex the descriptions of five *Indian* plants, but am unable, at this season, to re-examine them, and wholly despair of leisure to exhibit others, of which I have collected the names, and most of which I have seen in blossom.

I. MUCHUCUNDA.

Twenty, from One Base.

Cal. Five-parted, thick; leaflets, oblong.

Cor. Five petals, oblong.

Stam. From twelve to fifteen, rather long, fertile; five shorter, sterile. In some flowers, the *unprolific* stamens, longer.

Pist. Style cylindrick.

Peric. A capsule, with five cells, many-seeded.

Seeds: Roundish, compressed, winged.

Leaves: Of many different shapes.

Uses: The quality, refrigerant.

One flower, steeped a whole night in a glass of water, forms a cooling mucilage of use in virulent gonorrhœas. The *Muchucunda*, called also *Picbuca*, is exquisitely fragrant: its calyx

is covered with an odoriferous dust, and the dried flowers in fine powder, taken like snuff, are said, in a *Sanſcrit* book, almost instantaneously to remove a nervous head-ach.

Note. This plant differs a little from the *Pentapetes* of LINNÆUS,

II. BILVA OR MA'LU'RA.

Many on the Receptacle, and One,

Cal. Four, or five, cleft, beneath.

Cor. Four, or five, petals; mostly reflex,

Stam. Forty, to forty-eight, filaments; anthers, mostly erect.

Pist. *Germ.* roundish; *Style*, smooth, short; *Stigma*, clubbed.

Peric. A spheroidal berry, very large; many-seeded.

Seeds: Toward the surface, ovate, in a pelucid mucus.

Leaves: Ternate; common petiole, long; leaflets, subovate; obtusely notched, with short petioles; some almost lanced.

Stem: Armed with sharp thorns,

Uses: The fruit nutritious, warm, cathartick; in taste, delicious; in fragrance, exquisite: its aperient and deterſive quality, and its efficacy in removing habitual costiveness,

have been proved by constant experience. The mucus of the seed is, for some purposes, a very good cement.

Note. This fruit is called *Srip'hala*, because it sprang, say the *Indian* poets, from the milk of *Sri*, the goddess of abundance, who bestowed it on mankind at the request of *ISWARA*, whence he alone wears a chaplet of *Bilva* flowers; to him only the *Hindus* offer them; and, when they see any of them fallen on the ground, they take them up with reverence, and carry them to his temple. From the first blossom of this plant, that I could inspect, I had imagined, that it belonged to the same class with the *Durio*, because the filaments appeared to be distributed in five sets; but in all, that I have since examined, they are perfectly distinct,

III. SRINGA'TACA.

Four and One.

Cal. Four cleft, with a long peduncle, above.

Cor. Four petals.

Stam. Anthers, kidney-shaped.

Pist. *Germ.* roundish; *Style*, long as the filaments; *Stigma*, clubbed.

Seed: A *Nut* with four opposite angles (two of them *sharp* thorns) formed by the *Calyx*.

Leaves: Those, which float on the water, are rhomboidal; the two upper sides unequally notched, the two lower, right lines. Their petioles, buoyed up by spindle-shaped spongy substances, not bladders.

Root: Knotty, like coral.

Uses: The fresh kernel, in sweetness and delicacy, equals that of the filberd. A mucus, secreted by minute glands, covers the wet leaves, which are considered as cooling.

Note. It seems to be the floating *Trapa* of LINNÆUS.

IV. PU'TI CARAJA.

Ten and one.

Cal. Five-cleft.

Cor. Five equal petals.

Peric. A thorny legumen; two seeds.

Leaves: Oval, pinnated.

Stem: Armed.

Uses: The seeds are very bitter, and, perhaps, tonic; since one of them, bruised and given in two doses, will, as the *Hindus* assert, cure an intermittent fever.

V. MADHU'CA.

(See *Afiat. Research.* vol. I, page 300.

Many, *not* on the Receptacle, and One.

Cal. *Perianth* four, or five, leaved.

Cor. One-petaled. *Tube* inflated, fleshy.
Border nine, or ten, parted.

Stam. *Anthems* from twelve to twenty-eight,
erect, acute, subvillous.

Pist. *Germ*, roundish; *Style*, long, awl-shaped.

Peric. A *Drupe*, with two or three *Nuts*?

Leaves: Oval, somewhat pointed.

Uses: The *tubes*, esculent, nutritious; yielding, by distillation, an inebriating spirit, which, if the sale of it were duly restrained by law, might be applied to good purposes. An useful oil is expressed from the seed.

Note. It resembles the *Bassia* of KOENIG.

Such would be the method of the work, which I recommend; but even the specimen, which I exhibit, might, in skilful hands, have been more accurate. Engravings of the plants may be annexed; but I have more than once experienced, that the best anatomical and botanical prints give a very inadequate, and sometimes a very false, notion of the objects, which they were intended to represent. As we learn

a new language, by reading approved compositions. in it with the aid of a Grammar and Dictionary, so we can only study with effect the natural history of vegetables by analysing the plants themselves with the *Philosophia Botanica*, which is the *Grammar*, and the *Genera et Species Plantarum*, which may be considered as the *Dictionary*, of that beautiful language, in which nature would teach us what plants we must avoid as noxious, and what we must cultivate as salutary, for that the qualities of plants are *in some degree* connected with the *natural orders and classes* of them, a number of instances would abundantly prove.



Jatamansi.
or Indian Spikenard.

SPIKENARD OF THE ANCIENTS.

BY THE PRESIDENT.

IT is painful to meet perpetually with words, that convey no distinct ideas; and a natural desire of avoiding that pain excites us often to make inquiries, the result of which can have no other use than to give us clear conceptions. Ignorance is to the mind what extreme darkness is to the nerves: both cause an uneasy sensation; and we naturally love knowledge, as we love light, even when we have no design of applying either to a purpose essentially useful. This is intended as an apology for the pains which have been taken to procure a determinate answer to a question of no apparent utility, but which ought to be readily answered in *India*, "What is *Indián Spikenard*?" All agree, that it is an odoriferous plant, the best sort of which, according to *PTOLEMY*, grew about *Rangamritica*, or *Rangamáti*, and on the borders of the country now called *Bután*: it is mentioned by *Dioscorides*, whose work I have not in my possession;

but his description of it must be very imperfect, since neither LINNÆUS nor any of his disciples pretend to class it with certainty, and, in the latest botanical work, that we have received from *Europe*, it is marked as *unknown*. I had no doubt, before I was personally acquainted with KOENIG, that he had ascertained it; but he assured me, that he knew not what the *Greek* writers meant by the nard of *India*: he had found, indeed, and described a sixth species of the nardus, which is called *Indian* in the supplement to *Linnaeus*; but the *nardus* is a grass which, though it bear a *Spike*, no man ever supposed to be the *true* Spikenard, which the great Botanical Philosopher himself was inclined to think a species of *Andropogon*, and places, in his *Materia Medica*, but with an expression of doubt, among his polygamous plants. Since the death of KOENIG I have consulted every botanist and physician, with whom I was acquainted, on the subject before us; but all have confessed without reserve, though not without some regret, that they were ignorant what was meant by the *Indian* Spikenard.

In order to procure information from the learned natives, it was necessary to know the *name* of the plant in some *Asiatick* language. The very word *nard* occurs in the song of

SOLOMON; but the name and the thing were both exotic: the *Hebrew* lexicographers imagine both to be *Indiān*; but the word is in truth *Persian*, and occurs in the following distich of an old poet:

A'n chu bīkheft, īn chu nardest, ān chu shākheft, īn chu bār,
A'n chu bīkhī pāyidārest, īn chu nardī pāyidār.

It is not easy to determine in this couplet, whether *nard* mean the *stem*, or, as ANJU' explains it, the *pith*; but it is manifestly a part of a vegetable, and neither the *root*, the *fruit*, nor the *branch*, which are all separately named: the *Arabs* have borrowed the word *nard*, but in the sense, as we learn from the *Kāmūs*, of a *compound medicinal unguent*. Whatever it signified in old *Persian*, the *Arabick* word *fumbul*, which, like *fumbalah*, means an *ear* or *spike*, has long been substituted for it; and there can be no doubt, that by the *fumbul* of *India* the *Muselmāns* understand the same plant with the *nard* of PTOLEMY and the *Nardostachys*, or *Spikenard*, of GALEN; who, by the way, was deceived by the dry specimens, which he had seen, and mistook them for *roots*.

A singular description of the *fumbul* by ABU'LEFAZZL, who frequently mentions it as an ingredient in *Indian* perfumes, had for some time almost convinced me, that the true *Spike-*

nard was the *Cétaca*, or *Pandanus* of our botanists : his words are, *Sumbul panj berg dâred, ceb dirâxli ân dab angosjtejiu pahnâi seh*, or, “The *fumbul* has five leaves, ten fingers long, and three broad.” Now I well knew, that the minister of ACBAR was not a botanist, and might easily have mistaken a thyrsus for a single flower : I had seen no blossom, or assemblage of blossoms, of such dimensions, except the male *Cétaca* ; and, though the *Persian* writer describes the female as a different plant, by the vulgar name *Cyôra*, yet such a mistake might naturally have been expected in such a work : but what most confirmed my opinion, was the exquisite fragrance of the *Cétaca*-flower, which to my sense far surpassed the richest perfumes of *Europe* or *Asia*. Scarcely a doubt remained, when I met with a description of the *Cétaca* by FORSKOHL, whose words are so perfectly applicable to the general idea, which we are apt to form of *Spikenard*, that I give you a literal translation of them : “The *Pandanus* is an incomparable plant, and cultivated for its odour, which it breathes so richly, that one or two *Spikes*, in a situation rather humid, would be sufficient to diffuse an odoriferous air for a long time through a spacious apartment ; so that the natives in general are not solicitous about the living plants, but purchase

“*the Spikes at a great price.*” I learned also, that a fragrant essential oil was extracted from the flowers; and I procured from *Bandres* a large phial of it, which was adulterated with fœdal; but the very adulteration convinced me that the genuine essence must be valuable, from the great number of thyrſi, that must be required in preparing a small quantity of it. Thus had I nearly persuaded myself, that the true nard was to be found on the banks of the *Ganges*, where the *Hindu* women roll up its flowers in their long black hair after bathing in the holy river; and I imagined, that the *precious alabaſter-box* mentioned in the Scripture, and the *ſmall oyle*, in exchange for which the poet offers to entertain his friend with a *caſk of old wine*, contained an eſſence of the ſame kind, though differing in its degree of purity, with the nard, which I had procured: but an *Arab* of *Meca*, who ſaw in my ſtudy ſome flowers of the *Cataca*, informed me that the plant was extremely common in *Arabia*, where it was named *Cādhi*; and ſeveral *Mahomedans* of rank and learning have ſince aſſured me, that the true name of the *Indian Sumbul* was not *Cétaca*, but *Jatámāni*. This was important information: finding therefore, that the *Pandanus* was not peculiar to *Hinduſtān*, and conſidering, that the *Sumbul* of *ABU'LEAZI* differed from it in

the precise number of leaves on the thyrsus, in the colour, and in the season of flowering, though the length and breadth corresponded very nearly, I abandoned my first opinion, and began to enquire eagerly for the *Jatámánsi*, which grew, I was told, in the garden of a learned and ingenious friend, and fortunately was then in blossom. A fresh plant was very soon brought to me : it appeared on inspection to be a most elegant *Cypirus* with a polished three-sided culm, an umbella with three or four ensiform leaflets minutely serrated, naked proliferous peduncles, crowded spikes, expanded daggers ; and its branchy root had a pungent taste with a faint aromack odour ; but no part of it bore the least resemblance to the drug known in *Europe* by the appellation of *Spikenard* ; and a *Muselmán* physician from *Dehli* assured me positively, that the plant was not *Jatámánsi*, but *Súd*, as it is named in *Arabick*, which the author of the *Tohfatu'l Múmenín* particularly distinguishes from the *Indian Sumbul*. He produced on the next day an extract from the Dictionary of Natural history, to which he had referred ; and I present you with a translation of all that is material in it.

“ I. SUD has a roundish olive-shaped root, externally black, but white internally, and so fragrant as to have obtained in *Persia* the name

“ of *Subterranean Musk* : its leaf has some re-
 “ semblance to that of a leek, but is longer and
 “ narrower, strong, somewhat rough at the edges,
 “ and tapering to a point. 2. *SUMBUL* means a
 “ spike or ear, and was called *Nard* by the Greeks.
 “ There are three sorts of *Sumbul* or *Nardin*;
 “ but, when the word stands alone, it means
 “ the *Sumbul* of *India*, which is an herb with-
 “ out flower or fruit, (he speaks of the drug
 “ only) like the tail of an ermine, or of a small
 “ weasel, but not quite so thick, and about the
 “ length of a finger. It is darkish, inclining to
 “ yellow, and very fragrant : it is brought
 “ from *Hindustán*, and its medicinal virtue lasts
 “ three years.” It was easy to procure the dry
Jatámánsi, which corresponded perfectly with
 the description of the *Sumbul*; and though a
 native *Muselmán* afterwards gave me a *Persian*
 paper, written by himself, in which he repre-
 sents the *Sumbul* of *India*, the *Sweet Sumbul*,
 and the *Jatámánsi* as three different plants,
 yet the authority of *Tobfátál Múmenín* is de-
 cislve, that the *sweet Sumbul* is only another
 denomination of *nard*, and the physician who
 produced that authority, brought, as a specimen
 of *Sumbul*, the very same drug, which my *Pan-*
dit, who is also a physician, brought as a speci-
 men of the *Jatámánsi* : a *Bráhmén* of eminent
 learning gave me a parcel of the same sort, and

told me that it was used in their sacrifices; that, when fresh, it was exquisitely sweet, and added much to the scent of rich essences, in which it was a principal ingredient; that the merchants brought it from the mountainous country to the north-east of *Bengal*; that it was the entire plant, not a part of it, and received its *Sanſcrit* names from its resemblance to *locks of hair*; as it is called *Spikenard*, I suppose, from its resemblance to a *Spike*, when it is dried, and not from the configuration of its flowers, which the *Greeks*, probably, never examined. The *Persian* author describes the whole plant as resembling the tail of an ermine; and the *Jatámánsi*, which is manifestly the *Spikenard* of our druggists, has precisely that form, consisting of withered stalks and ribs of leaves, cohering in a bundle of yellowish brown capillary fibres, and constituting a spike about the size of a small finger. We may on the whole be assured, that the *nardus* of *Ptolemy*, the *Indian Sumbul* of the *Persians* and *Arabs*, the *Jatámánsi* of the *Hindus*, and the *Spikenard* of our shops, are one and the same plant; but to what class and genus it belongs in the *Linnean* system, can only be ascertained by an inspection of the fresh blossoms. Dr. *PATRICK RUSSEL*, who always communicates with obliging facility his extensive and accurate know-

ledge, informed me by letter, that “Spike-
 “nard is carried over the desert (from *India* I
 “presume) to *Aleppo*, where it is used in sub-
 “stance, mixed with other perfumes, and worn
 “in small bags, or in the form of essence, and
 “kept in little boxes or phials, like *atar* of roses.”
 He is persuaded, and so am I, that the *Indian*
 nard of the ancients, and that of our shops, is
 one and the same vegetable.

Though diligent researches have been made
 at my request on the borders of *Bengal* and
Behar, yet the *Jatmánsi* has not been found
 growing in any part of the *British* territories.
 Mr. SAUNDERS, who met with it in *Bután*,
 where, as he was informed, it is very common,
 and whence it is brought in a dry state to
Rangpúr, has no hesitation in pronouncing it a
 species of the *Baccharis*; and, since it is not
 possible, that he could mistake the *natural order*
 and *essential character* of the plant, which
 he examined, I had no doubt that the *Ja-
 tāmánsi* was composit. and corymbiferous with
 stamens connected by the anthers, and with
 female prolific florets intermixed with herma-
 phrodites: the word *Spike* was not used by the
 ancients with botanical precision, and the *Sta-
 chys* itself is verticillated, with only two species
 out of fifteen, that could justify its generick
 appellation. I therefore concluded, that *the*

true *Spikenard* was a *Baccharis*, and that, while the philosopher had been searching for it to no purpose,

the dull swain

Trod on it daily with his clouted shoon;

for the *Baccharis*, it seems, as well as the *Conyza*, is called by our gardeners; *Ploughman's Spikenard*. I suspected, nevertheless, that the plant, which Mr. SAUNDERS described, was not *Jatámánsi*; because I knew that the people of *Bután* had no such name for it, but distinguished it by very different names in different parts of their hilly country: I knew also, that the *Butías*, who set a greater value on the drug than it seems, as a perfume, to merit, were extremely reserved in giving information concerning it, and might be tempted, by the narrow spirit of monopoly, to mislead an inquirer for the fresh plant. The friendly zeal of Mr. PURLING will probably procure it in a state of vegetation; for, when he had the kindness, at my desire, to make enquiries for it among the *Bután* merchants, they assured him, that the living plants could not be obtained without an order from their sovereign the *Dévarāja*, to whom he immediately dispatched a messenger with an earnest request, that eight or ten of the growing plants might be sent to him at *Rangpúr*: should the *Dévarāja* comply with

that request, and should the vegetable flourish in the plain of *Bengal*, we shall have ocular proof of its class, order, genus, and species; and, if it prove the same with the *Jatámánsi*, of *Népál*, which I now must introduce to your acquaintance, the question, with which I began this essay, will be satisfactorily answered.

Having traced the *Indian Spikenard*, by the name of *Jatámánsi*, to the mountains of *Népál*, I requested my friend Mr. LAW, who then resided at *Gayá*, to procure some of the recent plants by the means of the *Népalese* pilgrims; who, being orthodox *Hindus* and possessing many rare books in the *Sanscrit* language, were more likely than the *Butias* to know the true *Jatámánsi*, by which name they generally distinguish it: many young plants were accordingly sent to *Gayá*, with a *Persian* letter specifically naming them, and apparently written by a man of rank and literature; so that no suspicion of deception or of error can be justly entertained. By a mistake of the gardener they were all planted at *Gayá*, where they have blossomed and at first seemed to flourish: I must, therefore, describe the *Jatámánsi* from the report of Mr. BURR, who favoured me with a drawing of it, and in whose accuracy we may perfectly confide; but, before I pro-

duce the description, I must endeavour to remove a prejudice, in regard to the *natural order* of the spikenard, which they, who are addicted to swear by every word of their master LINNÆUS, will hardly abandon, and which I, who love truth better than him, have abandoned with some reluctance. *Nard* has been generally supposed to be a *grass*; and the word *stachys* or *spike*, which agrees with the habit of that natural order, gave rise, perhaps, to the supposition. There is a plant in *Java*, which most travellers and some physicians called *spikenard*; and the Governor of *Chinsura*, who is kindly endeavouring to procure it thence in a state fit for examination, writes me word, that “a *Dutch* author pronounces it a *grass like the Cypirus*, “but insists that what we call the *spike* is the “fibrous part above the root, as long as a “man’s little finger, of a brownish hue inclining to red or yellow, rather fragrant, and “with a pungent, but aromattick, scent.” This is too slovenly a description to have been written by a botanist; yet I believe the latter part of it to be tolerably correct, and should imagine that the plant was the same with our *Jatámansi*, if it were not commonly asserted, that the *Ja-spikenard* was used as a condiment, and if well-informed man, who had seen it in the island, had not assured me, that it was a sort of

Pimenta, and consequently a species of *Myrtle*, and of the order now called *Hesperian*. The resemblance before mentioned between the *Indian sumbul* and the *Arabian Sud*, or *Cypirus*, had led me to suspect, that the true nard was a grass or a reed; and, as this country abounds in *odoriferous grasses*, I began to collect them from all quarters. Colonel KYD obligingly sent me two plants with sweet smelling roots; and, as they were known to the *Pandits*, I soon found their names in a *Sanscrit* dictionary: one of them is called *gandhas'at'bi*, and used by the *Hindus*, to scent the red powder of *Sapan* or *Bakkam* wood, which they scatter in the festival of the vernal season; the other has many names, and, among them, *adgaramastac* and *gonarda*, the second of which means *rustling in the water*; for all the *Pandits* insist, that *nard* is never used as a noun in *Sanscrit*; and signifies, as the root of a verb, *to sound* or *to rustle*. Soon after, Mr. BURROW brought me from the banks of the *Ganges* near *Heridwar*, a very fragrant grass, which in some places covers whole acres, and diffuses, when crushed, so strong an odour, that a person, he says, might easily have smelt it, as ALEXANDER is reported to have smelt the nard of *Gedrosia*, from the back of an elephant; its blossoms were not preserved, and it cannot therefore, be described. From Mr. BLANE of

Lucnow I received a fresh plant, which has not flowered at *Calcutta*; but I rely implicitly on his authority, and have no doubt that it is a species of *Andropogon*: it has rather a rank aromattick odour, and, from the virtue ascribed to it of curing intermittent fevers, is known by the *Sanscrit* name of *jwarāncuśa*, which literally means a *fever-book*, and alludes to the *iron-book* with which elephants are managed. Lastly, Dr. ANDERSON of *Madras*, who delights in useful pursuits and in assisting the pursuits of others, favoured me with a complete specimen of the *Andropogon Nardus*, one of the most common grasses on the Coast, and flourishing most luxuriantly on the mountains, never eaten by cattle, but extremely grateful to bees, and containing an essential oil, which, he understands, is extracted from it in many parts of *Hindustān* and used as an *atar* or *perfume*. He adds a very curious philological remark, that in the *Tamul* dictionary, most words beginning with *nār* have some relation to *fragrance*; as *nārukeradu* to yield an odour, *nārtum pillu*, lemon-grass, *nārtei*, citron, *nārtā manum*, the wild orange-tree, *nārum panei*, the *Indian aspin*, *nārum alleri*, a strong smelling flower, *id-nārtū*, which is put for *nard* in the *Tamul* version of our Scriptures; so that not only the *Id* of the *Hebrews* and *Greeks*, but even the

copia narium of HORACE, may be derived from an *Indian* root: to this I can only say, that I have not met with any such root in *Sanſcrit*, the oldeſt poliſhed language of *India*, and that in *Perſian*, which has a manifeſt affinity with it, *nâr* means a *pomegranate*, and *hârgil* (a word originally *Sanſcrit*) a *cocoa-nut*, neither of which has any remarkable fragrance.

Such is the evidence in ſupport of the opinion given by the great *Swediſh* naturaliſt, that the true nard was a gramineous plant and a ſpecies of *Andropogon*; but, ſince no graſs, that I have yet ſeen, bears any reſemblance to the *ſatâmânsî*, which I conceive to be the *nardus* of the ancients, I beg leave to expreſs my diſſent, with ſome confidence, as a philologer, though with humble diffidence as a ſtudent in botany. I am not, indeed, of opinion, that the *nardum* of the *Romans*, was merely the eſſential oil of the plant, from which it was denominated, but am ſtrongly inclined to believe, that it was a *generick* word, meaning what we now call *ôtar*, and either the *ôtar* of roſes from *Caſhmîr* and *Perſia*, that of *Cétaca*, or *Pandanus*, from the weſtern coaſt of *India*, or that of *Aguru*, or aloe-wood, from *Aſâm* or *Cochinchina*, the proceſs of obtaining which is deſcribed by ABU'LFÄZL, or the mixed perfume, called *âbîr*, of which the principal in-

gredients were yellow sandal, violets, orange-flowers, wood of aloes, rose-water, musk, and true spikenard: all those essences and compositions were costly; and, most of them being sold by the *Indians* to the *Persians* and *Arabs*, from whom, in the time of OCTAVIUS, they were received by the *Syrians* and *Romans*, they must have been extremely dear at *Jerusalem* and at *Rome*. There might also have been a pure *nardine oil*, as ATHENÆUS calls it; but *nardum* probably meant (and KOENIG was of the same opinion) an *Indian* essence in general, taking its name from that ingredient, which had, or was commonly thought to have, the most exquisite scent. But I have been drawn by a pleasing subject to a greater length than I expected, and proceed to the promised description of the true *nard* or *Jatámánsi*, which, by the way, has other names in the *Amarcísib*, the smoothest of which are *jatílá* and *lomasà*, both derived from words meaning *hair*. M^r. BURT, after a modest apology for his imperfect acquaintance with the language of botanists, has favoured me with an account of the plant, on the correctness of which I have a perfect reliance, and from which I collect the following *natural characters*:

AGGREGATE.

Cal. Scarce any. *Margin*, hardly discernible.

Cor. † One petal. • Tube somewhat gibbous.
Border five cleft.

Stam. Three *Anth.*s.

Pist. Germ Beneath. One *Style* erect.

Seed Solitary, crowned with a pappus.

Root Fibrous.

Leaves Hearted,, fourfold; *radical* leaves petioled.

It appears, therefore, to be the *Protean* plant, VALERIAN, a sister of the mountain and *Celtick* Nard, and of a species, which I should describe in the *Linnean* style: VALE-RIANA JATA'MA'NSI floribus triandris, foliis cordatis quaternis, radicalibus petiolatis. The radical leaves, rising from the ground and enfolding the young stem, are plucked up with a part of the root; and being dried in the sun or by an artificial heat, are sold as a drug, which from its appearance has been called *spikenard*; though, as the *Persian* writer observes, it might be compared more properly to the tail of an ermine: when nothing remains but the dry fibres of the leaves, which retain their original form, they have some resemblance to a lock of hair, from which the *Sanscrit* name, it seems, is derived. Two mercantile agents from *Butan* on the part of the *Déwarjé* were examined, at my request, by Mr. HARRINGTON, and inform-

ed him, that the drug, which the *Bengalese* called *Jatámánsi*, “grew erect above the surface of the ground, resembling in colour an ear of green wheat; that, when recent, it had a faint odour, which was greatly increased by the simple process of drying it; that it abounded on the hills, and even on the plains, of *Bután*, where it was collected and prepared for medicinal purposes.” What its virtues are, experience alone can ascertain; but, as far as botanical analogy can justify a conjecture, we may suppose them to be antispasmodick; and, in our provinces, especially in *Behar*, the plant will probably flourish; so that we may always procure it in a state fit for experiment. On the description of the *Indian* spikenard, compared with the drawing, I must observe, that, though all the leaves, as delineated, may not appear of the same shape, yet all of them are not fully expanded. Mr. BURT assures me, that the four radical leaves are *hearted and petioled*; and it is most probable, that the cauline and floral leaves would have a similar form in their state of perfect expansion, but unfortunately, the plants at *Gayá* are now shrivelled; and they, who seek farther information, must wait with patience, until new stems and leaves shall spring from the roots, or other plants shall be brought from *Népál* and

But on. On the proposed inquiry into the virtues of this celebrated plant, I must be permitted to say that, although many botanists may have wasted their time in enumerating the qualities of vegetables, without having ascertained them by repeated and satisfactory experiments, and although mere botany goes no farther than technical arrangement and description, yet it seems indubitable, that the great end and aim of a botanical philosopher is, to discover and prove the several uses of the vegetable system, and, while he admits with HIPPOCRATES the *fallaciousness of experience*, to rely on experiment alone as the basis of his knowledge.

ADDITIONAL REMARKS

ON THE

SPIKENARD OF THE ANCIENTS.

BY THE PRESIDENT.

NEARLY at the time when the result of my first inquiries concerning spikenard was published in the second volume of our *Asiatick Researches*, there appeared in the *Philosophical Transactions* an account of the ANDROPOGON *Jwarāncusa*, the specimen of which Dr. BLANE had received from *Lucnow*, and which he supposes to be the true *Indick* nard of DIOSCORIDES and GALEN: having more than once read his arguments with pleasure, but not with conviction, I feel it incumbent on me to state my reasons for dissenting from the learned physician with all the freedom of a searcher for truth, but without any diminution of that respect, to which his knowledge and candour justly entitle him.

In the first place, there is a passage in Dr. BLANE's paper, which I could not but read with surprise; not because it is erroneous or disputable (for nothing can be more certain), but because it is decisive against the very proposition, which the writer endeavours to support: "DIOSCORIDES mentions the *Syriack* nard, says "the doctor, as a species different from the "*Indian*, which was certainly brought from some "of the remote parts of India; for both he and "GALEN, by way of fixing more precisely "the country, whence it came, call it also "Gagnites." We may add, that PTOLEMY, who, though not a professed naturalist, had opportunities in *Egypt* of conversing with *Indian* merchants on every thing remarkable in this country, distinguishes *Rangamati*, as producing the true spikenard; and it is from the borders of that very district, if we believe modern *Indians*, that the people of *Butan* bring it yearly into *Bengal* (a). Now it is not contended, that the new species of *Andropogon* (if it be a new species) may be the *Indick* nard of DIOSCO-

(a) PTOLEME'E distingue le canton de *Rbandamarcotta*, en ce qu'il fournit la plante, que nous appellons *Spic nard*, ce qui peut convenir à *Rangamati*; et des différentes espèces l'*Indique* est bien la plus estimée.

D'ANV. *Antiq. Geogr. Ind.* 81.

RIDES, '(b), because it was found by Mr. BLANE in a remote part of *India* (for that solitary fact would have proved nothing); but it is learnedly and elaborately urged, that it *must* be the true *Indian* spikenard; because it differs only in the length of the stalks from the nard of GARÇIAS, which, according to ILLIM, is the only species of *nardus* exported from *India*, and which resembles a dried specimen seen by RUMPHIUS, and brought, he says, among other countries, from *Mackran*, or the ancient *Gadrosia*, the very country, where, according to ARRIAN, the true nard grew in abundance; for "the *Phenicians*, " he says, collected a plentiful store of it, and "so much of it was trampled under foot by the " army, that a strong perfume was diffused on " all sides of them:" now there is a singular coincidence of circumstances; for our *Andropogon* was discovered by the scent of its roots, when they were crushed by the horses and elephants in a hunting-party of the *Vazir A'su-FUDDAULAH*; so that, on the whole, *it must be the same with the plant mentioned by ARRIAN*: but it may be argued, I think, more conclusively, that a plant, growing with great luxuriance in *Gadrosia* or *Mackran*, which the doctor

(b) Dr. ROXBURGH with great reason supposes it to be the *Muricated ANDROPOGON* of KOENIG, who mentions the roots as odoriferous, when sprinkled with water.

See RETZ, III. Fascic. 43. and v. 21.

admits to be a *maritime province* of *Persia*, could not possibly be the same with a plant *confined to remote parts* of *India*; so that, if GARGIAS, RUMPHIUS, and ARRIAN be supposed to have meant the same species of nard, it was evidently different from that of DIOSCORIDES and GALEN. The respectable writer, with whose opinions I make so free, but from no other motive than a love of truth, seems aware of a little geographical difficulty from the western position of *Macrán*; for he, first, makes it extend to the river *Indus*, and then infers, from the long march westward and the distresses of ALEXANDER'S army, subsequent to the discovery of the spikenard, that it must have grown in the more eastern part of the desert, and consequently on the very borders of *India*; but, even if we allow *Gedrosia*, or *Gadrosis*, to have been the same tract of land with *Macrán* (though the limits of all the provinces in *Persia* have been considerably changed), yet the frontier of *India* could never with any propriety be carried so far to the west; for not only the *Oritæ* and *Arabitæ*, but, according to MELA, the whole province of *Ariana*, were between *Gadrosis* and the *Indus*; and, though *Macrán* (for so the word should be written) may have been annexed to *India* by such whimsical geographers as the *Turks*, who give the name of

white *Indians* to the *Persians* of *Arachosia*, and of yellow *Indians* to the *Arabs* of *Yemen*, yet the river *Indus*, with the countries of *Sind* and *Multán* on both sides of it, has ever been considered by the *Persians* and *Arabs*, as the western limit of *Hind* or *India*; and *ARRIAN* himself expressly names the *Indus* as its known boundary: let *Gadrosia*, however, be *Macrán*, and let *Macrán* be an *Indian* province, yet it could never have been a remote part of *India* in respect of *Europe* or *Egypt*, and, consequently, was not meant by *GALEN* and *DIOSCORIDES*, when they described the true spikenard. It must be admitted, that, if the *Siree* of *RUMPHIUS*, which differs little from the *nardus* of *GARCÍAS*, which corresponds for the most part with the new *Andropogon*, was ever brought from the province of *Macrán*, they were all three probably the same plant with the nard of *Arrian*; but, unfortunately, *RUMPHIUS* thought of no country less than of *Persia*, and of no province less than of *Macrán*; for he writes very distinctly, both in his *Latin* and his *Dutch* columns, that the plant in question grows in *Macian*, which he well knew to be one of the *Moluccas* (c): I am far from intending to give

(c) Hi flores sæpe, immo vulgo fere, observantur in ætustis *Siree* stipitibus, qui in *Ternata*, *Motira*, et *Mackian* crescunt. Vol. 5. Lib. 3. Cap. 24. p. 182.

pain by detecting this trifling mistake ; and, as I may have made many of greater consequence, I shall be truly obliged to any man, who will set me right with good manners, the sacred laws of which ought never to be violated in a literary debate, except when some petulant aggressor has forfeited all claim to respect.

ARRIAN himself can by no means be understood to assert, that the *Indian* spikenard grew in *Persia* ; for his words are *a fragrant root of nard* (*d*), where the omission of the definite articles implies rather *a* nard, than *the* nard, or the most celebrated species of it ; and it seems very clear, that the *Greeks* used that foreign word generically for odoriferous plants of different natural orders : But ARRIAN in truth was a mere compiler ; and his credit, even as a civil historian, seems liable to so much doubt, that it cannot be safe to rely on him for any fact in the history of nature. “ We cannot, says the judicious and accurate STRABO, “ give easy credence to the generality even of “ contemporary writers concerning ALEXAN- “ DER, whose fame was astonishingly high, “ and whose historians, preferring wonders to “ truth, wrote with secure negligence ; well “ knowing, that, as the farthest limits of *Asia*

“ were the scene of his actions, their assertions
 “ could hardly be disproved.” Now ARRIAN’S
 principal authority was ARISTOBELUS of *Cas-*
sandra, whose writings were little prized by the
 ancients, and who not only asserted, “ that
 “ *Gadrosia* produced very tall *myrrh*-trees, with
 “ the gum of which the *Phenicians* loaded many
 “ beasts,” (notwithstanding the slaughter of
 them from the distress of the whole army), but,
 with the fancy of a poet describing the nest of
 a phoenix, placed *myrrh*, *incense*, and *cassia*,
 with *cinnamon* and *spikenard* itself, even in the
 wilds of *Arabia*: “ The fruitfulness of *Arabia*,”
 says ARRIAN, “ tempted the king of *Macedon*
 “ to form a design of invading it; for he had
 “ been assured, that *myrrh* and *frankincense*
 “ were collected from the trees of that country;
 “ that *cinnamon* was procured from one of its
 “ shrubs; and that its meadows produced spon-
 “ taneously abundance of *spikenard*.” HERODOTUS,
 indeed, had heard of *cinnamon* in
Arabia, where the *Laurus*, to the bark of
 which we now give that name, was, I verily
 believe, never seen: even the *myrrh*-tree does
 not seem to have been a native of *Arabia*, and
 the publick are now informed, that it was
 transplanted from *Abyssinian* forests, and has not
 flourished on the opposite shore; but, whatever
 be the countries of *myrrh* and *cinnamon*, we

may be certain, that any learned *Arab* would laugh at us, if we were to tell him, that the *Sumbulu Hind* grew wild in abundance on the plains of *Tabaméb*. It seems a bold allegation of GARCÍAS, that he has exhibited "the only species of *nardus* known in *India*, either for consumption by the natives or for exportation to *Persia* and *Arabia*:" if he meant, that any plant was either used in this country or exported from it by the name of *nard*, he had been strangely deceived; and if he meant, that it was the only fragrant grass used here as a medicine or as a perfume, his error was yet more gross. But, whatever his meaning might have been, if the *nard* of GARCÍAS and of ARRIAN was one and the same plant, it is wonderful; that it should ever have been exported to *Persia* and *Arabia*, where it grew, we are told, in so great abundance. The *nard* of *Arabia* was, probably, the ANDROPOGON *Schænanthus*, which is a native of that country; but, even if we suppose, that the *spikenard* of *India* was a reed or a grass, we shall never be able to distinguish it among the many *Indian* species of *Cyperus*, *Andropogon*, *Schænus*, *Carex*, and other genera of those natural orders, which here form a wilderness of sweets, and some of which have not only fragrant roots, but even spikes in the ancient and modern senses of that emphatical

word; one of them, which I never have seen in blossom, but suppose from its appearance to be a *Schænus*, is even called *Gónardá*, and its dry root has a most agreeable odour; another, which RHEEDE names *Bálúca*, or *Ramacciam*, or white *Irivéli*, and which BURMAN thought a variety of the *Schænanthus*, is a considerable article, it seems, of *Indian* commerce, and, therefore, cultivated with diligence, but less esteemed than the *black* sort, or *Carabála*, which has a more fragrant root and affords an extremely odoriferous oil (e). All those plants would, perhaps, have been called *nards* by the ancients; and all of them have stronger pretensions to the appellation of *the true spikenard*, than the *Febrifuge ANDROPOGON*, which the *Hindus* of *Behár* do not use as a perfume. After all, it is assuming a fact without proof, to assert, that the *Indian spikenard* was evidently gramineous; and, surely, that fact is not proved by the word *arista*, which is conceived to be of a *Grecian* origin, though never applied in the same sense by the *Greeks* themselves, who perfectly well knew what was best for mankind in the vegetable system, and for what gift they adored the god-

(e) 12 Hort. Malab. tab. 12. and 9 H. M. p. 145. See also the *Flora Indica*, and a note from HERMAN on the valuable oil of *Serec*.

deſs of *Eleuſis*. The *Roman* poets (and poets only are cited by Dr. BLANE, though naturaliſts alſo are mentioned) were fond of the word *ariſta*, becauſe it was very convenient at the cloſe of an hexameter, where we generally, if not conſtantly, find it; as HOMER declares in LUCIAN, that he began his *Iliad* with Μῆνιν, becauſe it was the firſt commodious word that preſented itſelf, and is introduced laughing at a profound critick, who diſcovered in that ſingle word an epitome of the whole poem on the *wrath* of ACHILLES: ſuch poets as OVID and LACTANTIUS deſcribed plants, which they never had ſeen, as they deſcribed the neſt of the phenix, which never exiſted, from their fancy alone; and their deſcriptions ought not ſeriously to be adduced as authorities on a queſtion merely botanical; but, if all the naturaliſts of *Greece* and *Italy* had concurred in aſſuring us, that the nard of *India* bore an ear or ſpike, without naming the ſource of their own information, they would have deſerved no credit whatever; becauſe not one of them pretends to have ſeen the freſh plant, and they had not even agreed among themſelves, whether its virtues reſided in the root or in the *buſky leaves* and ſtalks, that were united with it. PIETRO DELLA VALLE, the moſt learned and accompliſhed of eaſtern travellers, does not ſeem to have known the *Indian*

spikenard, though he mentions it more than once by the obsolete name of *Spigonardo*; but he introduces a *Sumbul* from *Khatá*, or a part of *China*, which he had seen dry, and endeavours to account for the *Arabick* name in the following manner:—"Since the *Khatáian* "*Sumbul*, says he, is not a *spike* but a *root*, "it was probably so named, because the word "*Sumbul* may signify, in a large acceptation, "not only the spike, but *the whole plant*, whatever *herb or grass* may be sown; as the *Arabick* dictionary (*f*), entitled *Kámús*, appears "to indicate:" The passage, to which he alludes, is this; "SUMBUL, says the author of the "*Kámús*, is an *odoriferous plant*, the strongest of "which is the *Jurí*, and the weakest the *Hindi*; "but the *Sumbul* of *Rúm* has the name of *nar-* "*dín*." I suggested in my former paper, and shall repeat in this, that the *Indian* spikenard, as it is gathered for use, is in fact *the whole plant*; but there is a better reason why the name *Sumbul* has been applied to it. By the way, DELLA VALLE failed, as he tells us, along

(f) Giacchè il *Sombol* del *Cataio* è radice e non è *Spiga*, potremmo dire, che così s'ì chiami, perchè forse la parola *Sombol* possa più largamente significare non solo la spiga, ma tutta la pianta di ogni erba o biada, che si semina, come par, che il *Camús*, vocabolario *Arabico*, ne dia indizio.

Lett. 18. di *Bagdad*.

the coast of *Macráh*, which he too supposes to have been a part of *Gedrosia*; but he never had heard, that it produced *Indian* spikenard, though the *Persians* were fully acquainted with that province; for he would not have omitted so curious a fact in his correspondence with a learned physician of *Naples*, for whose sake he was particularly inquisitive concerning the drugs of *Asia*: it is much to be wished, that he had been induced to make a short excursion into the plains of *Macrán*, where he might have found, that the wonderful tree, which *ARRIAN* places in them, *with flowers like violets, and with thorns of such force and magnitude, as to keep wild beasts in captivity, and to transfix men on horseback, who rode by them incautiously*, was no more probably than a *Mimosa*, the blossoms of which resembled violets in nothing but in having an agreeable scent.

Let us return to the *Arabs*, by whom *Dioscorides* was translated with assistance, which the wealth of a great prince will always purchase, from learned *Greeks*, and who know the *Indian* spikenard, better than any *European*, by the name of *Sumbulu'l Hind*: it is no wonder, that they represent it as weaker in scent and in power than the *Sumbul* of the lower *Asia*, which, unless my smell be uncommonly defective, is a strong *Valerian*; especially as they could

only have used the dry nard of *India*, which loses much of its odour between *Rangpúr* and *Calcutta*. One question only remains (if it be a question), whether the *Sumbulu'l Hind* be the true *Indian* spikenard; for, in that case, we know the plant to be of the natural order, which LINNÆUS calls *cæggregate*. Since the publication of my paper on this subject, I put a fair and plain question severally to three or four *Musselman* physicians, "What is the *Indian* name of the plant, which the *Arabs* call "*Sumbulu'l Hind*?" They all answered, but some with more readiness than others, *Jatámánsi*. After a pretty long interval, I shewed them the *spikes* (as they are called) of *Jatámánsi*, and asked what was the *Arabick* name of that *Indian drug*: they all answered readily, *Sumbulu'l Hind*. The same evidence may be obtained in this country by any other *European*, who seeks it; and if, among twelve native physicians, versed in *Arabian* and *Indian* philology, a single man should after due consideration give different answers, I will cheerfully submit to the *Roman* judgement of *non liquet*. My own inquiries having convinced me, that the *Indian* spikenard of DIOSCORIDES is the *Sumbulu'l Hind*, and that the *Sumbulu'l Hind* is the *Jatámánsi* of AMARSINH, I am persuaded, that the true nard is a species of *Valerian*, pro-

duced in the *most remote* and hilly parts of *India*, such as *Népal*, *Moráng*, and *Butan*, near which *PROLEMY* fixes its native soil: the commercial agents of the *Dévarája* call it also *Pampi*, and, by their account, the dried specimens, which look like the tails of ermines, *rise from the ground, resembling ears of green wheat both in form and colour*; a fact, which perfectly accounts for the names *Stachys*, *Spica*, *Sumbul*, and *Khúshab*, which *Greeks*, *Romans*, *Arabs*, and *Persians* have given to the drug, though it is not properly a *spike*, and not merely a root, but *the whole plant*, which the natives gather for sale, before the radical leaves, of which the fibres only remain after a few months, have unfolded themselves from the base of the stem. It is used, say the *Butan* agents, as a perfume and in medicinal unguents, but with other fragrant substances, the scent and power of which it is thought to increase: as a medicine, they add, it is principally esteemed for complaints in the bowels. Though considerable quantities of *Jatámánsi* are brought in the caravans from *Butan*, yet the living plants, by a law of the country, cannot be exported without a licence from the sovereign, and the late Mr. *PURLING*, on receiving this intelligence, obligingly wrote, for my satisfaction, to the *Dévarája*, requesting him to send eight or

ten of the plants to *Rangpúr*. ten were accordingly sent in pots from *Tafisudán*, with as many of the natives to take care of them under a chief, who brought a written answer from the *Rájá* of *Butan*; but that prince made a great merit of having complied with such a request, and my friend had the trouble of entertaining the messenger and his train for several weeks in his own house, which they seem to have left with reluctance. An account of this transaction was contained in one of the last letters, that Mr. PURLING lived to write; but, as all the plants withered before they could reach *Calcutta*, and as inquiries of greater importance engaged all my time, there was an end of my endeavours to procure the fresh *Jatámáns*, though not of my conviction, that it is *the true hard of the ancients*.



BOTANICAL OBSERVATIONS

ON THE

SPIKENARD OF THE ANCIENTS,

INTENDED AS A SUPPLEMENT TO THE LATE

SIR WILLIAM JONES'S PAPERS ON THAT PLANT.

BY WILLIAM ROXBURGH, M.D.

VALERIANA JATAMANSI.

GENERIC CHARACTER. FLOWERS triandrous, leaves entire, four-fold, the inner radical pair petiol'd, and cordate; the rest smaller, sessile, and sub-lanceolate; seeds crowned with a pappus.

V. *Jatamansi* of Sir WILLIAM JONES. See *Asiatic Researches*, vol. 2, page 405, 417, and vol. 4, page 109.

NOVEMBER 6th, 1794. I received from the Honourable C. A. BRUCE, Commissioner

at *Cobs-Beybar*, two small baskets with plants of this valuable drug; he writes to me on the 27th *September* (so long had the plants been on the road), that he had, the day before, received them from the *Deb Rajah* of *Bootan*, and further says, that the *Booteahs* know the plant by two names, viz. *Jatamanji*, and *Pampé* or *Paumpé*.

I need scarce attempt to give any further history of this famous odoriferous plant than what is merely botanical, and that with a view to help to illustrate the learned dissertations thereon, by the late Sir WILLIAM JONES, in the 2d and 4th volumes of these *Researches*, and chiefly by pointing out the *part of the plant* known by the name, *Indian Nard* or *Spikenard*; a question on which MATHEOLUS, the commentator of *Dioscorides*, bestows a good deal of argument; viz. Whether the roots, or stalks, were the parts esteemed for use, the testimony of the ancients themselves on this head being ambiguous. It is therefore necessary for those who wish for a more particular account of it, to be acquainted with what that gentleman has published on the subject.

The plants now received, are growing in two small baskets of earth, in each basket there appears above the earth between thirty and

forty hairy, spike-like bodies, but more justly compared to the tails of *Ermines*, or small *Weasels**; from the apex of each, or at least of the greatest part of them, there is a smooth lanceolate, or lanceolate-oblong, three or five-nerved, short-petiol'd, acute, or obtuse, slightly serrulate leaf or two shooting forth. Fig. 1. represents one of them in the above state, and on gently removing the fibres, or hairs which surround the short petiols of these leaves, I find it consists of numerous sheaths, of which one, two or three of the upper or interior ones are entire, and have their fibres connected by a light-brown coloured membranous substance as at *b*. but in the lower exterior sheaths, where this connecting membrane is decayed, the more durable hair-like fibres remain distinct, giving to the whole the appearance of an *Ermine's* tail: this part, as well as the root itself, are evidently perennial†. The root itself (beginning at the

* The term *spica*, or spike, is not so ill applied to this substance, as may be imagined; several of the *Indian* grasses, well known to me, have spikes almost exactly resembling a single straight piece of *nardus*, and when those hairs (or flexible *arista* like bristles) are removed, *PLINY's* words, "*frutextradice pingui et crassa*," are by no means inapplicable. See Fig. 2, from *a* to *b*.

† The above described perennial hairy portion of the plant, is clearly the *Indian* spikenard of our shops; but

surface of the earth where the fibrous envelope ends) is from three to twelve inches long, covered with a pretty thick, light-brown coloured bark: from the main root, which is sometimes divided, there issues several smaller fibres. Fig. 2, is another plant with a long root; here the hair-like sheaths, beginning at *a*. are separated from this the perennial part of the stem, and turned to the right side; at the apex is seen the young shoot, marked *b*, which is not so far advanced as at Fig. 1; *c c c* show the re-

whether the nardus of the ancients, or not, I leave to better judges to determine; however, I believe few will doubt it after having read Sir WILLIAM JONES's Dissertations thereon, and compared what he says with the accompanying drawings of the perennial hairy part of the stem of this plant, which are taken from the living plants immediately under my own eyes: the drawing of the herbaceous, or upper part of the plant, is out of the question in determining this point, and only refers to the place the plant bears in our botanical books. While writing the above, I desired an *Hindu* servant to go and buy me from their apothecaries shops a little *Jatamansa*, without saying more or less: he immediately went and brought me several pieces of the very identical drug, I have been describing; a drawing of one of the pieces is represented at Fig. 4, and agrees not only with those I have taken from the living plants, but also exceedingly well with GARCIA AB ORTA's figure of the nardus indica, which is to be found at page 129, of the fourth edition of CLUSIUS's *Latin* translations of his history of *Indian* drugs, published in 1603.

mains of last year's annual stem. When the young shoot is a little further advanced than in Fig. 2, and not so far as in Fig. 1. they resemble the young convolute shoots of monocotyledonous plants. • June 1795. The whole of the abovementioned plants have perished, without producing flowers, notwithstanding every care that could possibly be taken of them. The principal figure in the drawing marked Fig. 3, and the following description, as well as the above definition, are therefore chiefly extracted from the engraving and description in the second volume of these Researches, and from the information communicated to me by Mr. BURT, the gentleman who had charge of the plants that flowered at *Gaya*, and who gave Sir WILLIAM JONES the drawing and description thereof.

Description of the Plant.

Root, it is already described above.

Stem, lower part perennial, involved in fibrous sheaths, &c. as above described; the upper part herbaceous, suberect, simple, from six to twelve inches long.

Leaves four-fold, the lowermost pair of the four radical are opposite, sessile, oblong, forming as it were a two-valved spathe; the other pair are also opposite petiol'd, cordate, margins

waved, and pointed; those of the stem sessile, and lanceolate; all are smooth on both sides.

Corymb terminal, first division trichotomous.

Bracts awl'd.

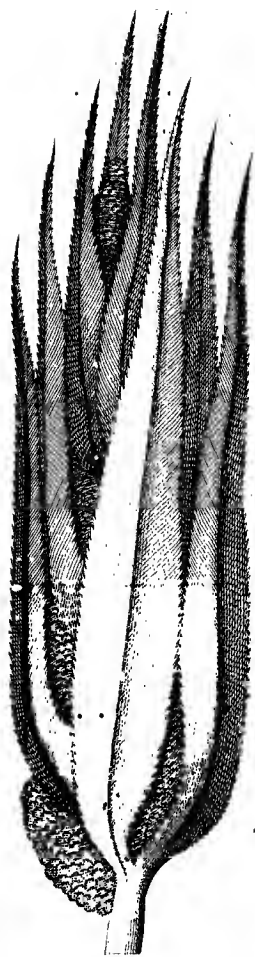
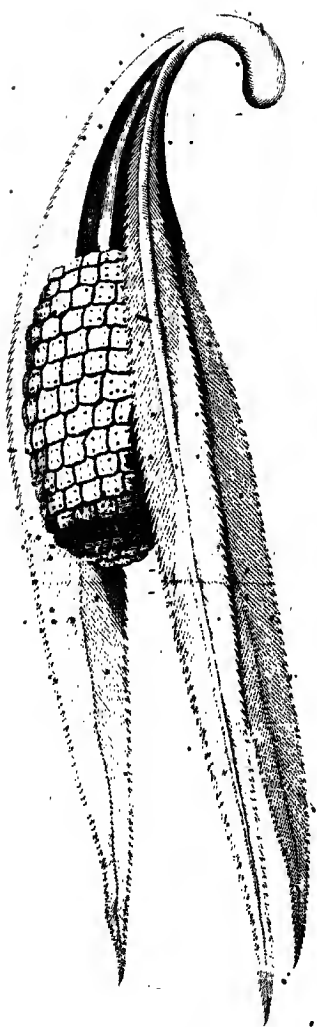
Calyx scarce any.

Corol one petal'd, funnel-shaped, tube somewhat gibbous. Border five-cleft.

Stamens, filaments three, project above the tube of the corol; anthers incumbent.

Pistil, germ beneath. Style erect, length of the tube. Stigma simple.

Pericarp, a single seed crowned with a pappus.



केतक *Cibou*

*The fruit and the Male flower
of the - Pandanus.*

THE FRUIT OF 'THE MELLORI.

BY THE PRESIDENT.

AS far as we can determine the class and order of a plant from a mere delineation of its fruit, we may safely pronounce, that the *Léram* of *Nicobar* is the *Cádbi* of the *Arabs*, the *Cétaca* of the *Indians*, and the *Pandanus* of our botanists, which is described *very awkwardly* (as KOENIG first observed to me) in the Supplement to LINNÆUS ; he had himself described with that *elegant conciseness*, which constitutes the beauty of the '*Linnean*' method, not only the wonderful fructification of the fragrant *Cétaca*, but most of the flowers, which are celebrated in *Sanscrit*, by poets for their colour or scent, and by physicians for their medical uses ; and, as he bequeathed his manuscripts to SIR JOSEPH BANKS, we may be sure, that the publick spirit of that illustrious naturalist will not suffer the labours of his learned friend to be sunk in ob-

livion. Whether the *PANDANUS Lérām* be a new *species*, or only a variety; we cannot yet positively decide; but four of the plants have been brought from *Nicobar*, and seem to flourish in the Company's Botanical Garden, where they will probably blossom; and the greatest encouragement will, I trust, be given to the cultivation of so precious a vegetable. A fruit weighing twenty or thirty pounds, and containing a farinaceous substance, both palatable and nutritive in a high degree, would perhaps, if it were common in these provinces, for ever secure the natives of them from the horrors of famine; and the *Pandanus* of *Bengal* might be brought, I conceive, to equal perfection with that of *Nicobar*, if due care were taken to plant the male and female trees in the same place, instead of leaving the female, as at present, to bear an imperfect and unproductive fruit, and the distant male to spread itself only by the help of its radicating branches.

A CATALOGUE

INDIAN PLANTS,

COMPREHENDING THEIR SANSKRIT,

AND

AS MANY OF THEIR LINNÆAN GENERIC NAMES AS COULD
WITH ANY DEGREE OF PRECISION BE ASCERTAINED.

BY THE PRESIDENT.

A'CA'SABALLI', <i>Cassya</i> .	Amlalónica, <i>Oxalis</i> .
Achyuta, <i>Morinda</i> .	Amlavétasa, <i>Hypericum</i> .
A'cránti <i>Solanum</i> .	Amlicá, <i>Tamarindus</i> .
Achha.	Amra, <i>Mangifera</i> .
5 Agastyá, <i>Æschynomene</i> .	20 Amrátaca, <i>Spondias</i> .
Agnis'ic'há.	Anco't'a.
Aguru, <i>Cordia</i> .	Ans'umátì.
Alábu, <i>Cucurbita</i> .	An'u, <i>Oryza</i> .
Alamvusha, <i>Bryonia</i> .	Apámarga.
10 Alarca, <i>Asclepias</i> .	25 Apas'jítá, <i>Clitoria</i> .
Alpamáris'ha.	Arca, <i>Asclepias</i> .
Amalá.	A'rdracá, <i>Amomum</i> .
A'malacì, <i>Phyllanthus</i> .	Ariméda:
Ambasht'ha.	Arishtâ, <i>Xanthium</i> .
15 Amlána, <i>Gomphrena</i> ?	30 Arjaca, <i>Ocimum</i> .

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| Arjuna, <i>Lagerstroemia</i> ? | Brahmafuverchalá. |
| Arushcara, <i>Semecarpus</i> . | Bráhmì, <i>Ruta</i> . |
| A'smantaca. | Bilva, <i>Cratæva</i> . |
| Asóca, a new genus. | Biranga. |
| 35 A'sp'hota, <i>Nyctanthes</i> . | 70 Cacamachi. |
| A'us'vríhi, <i>Oryza</i> . | Cácangì, <i>Aponogeton</i> ? |
| Atavishá. | Cachu, <i>Arum</i> . |
| Atichará. | Çadalì, <i>Musa</i> . |
| Atimuçla, <i>Banisteria</i> . | Cadamba, <i>Nauclea</i> . |
| 40 A'vigna, <i>Carissa</i> ? | 75 Cahlára, <i>Nymphæa</i> . |
| Bacula, <i>Mimusops</i> . | Cála. |
| Badarì, <i>Rhamnus</i> . | Cálá. |
| Bahuváraca. | Calambí. |
| Bahvanga, a new genus. | Calamì. |
| 45 Balá. | 80 Caláya Calinga, <i>Cucurbita</i> . |
| Bála. | Calpaca. |
| Bandhúca, <i>Ixora</i> . | Cúmalatá, <i>Ipomæa</i> . |
| Banga, <i>Cannabis</i> ? | Cámpilla, a new genus. |
| Báta, <i>Ficus</i> . | Canchanára, <i>Bauhinia</i> . |
| 50 Bhadramuftaca, <i>Cyperus</i> ? | 85 Çanda, <i>Dracontium</i> . |
| Bhanga, <i>Gossypium</i> . | Candarála. |
| Bhanti, <i>Clerodendrum</i> . | Candúra, <i>Dolichos</i> . |
| Bhávya, <i>Dillenia</i> . | Candúru, <i>Scilla</i> ? |
| Bharadwájì. | Cangu. |
| 55 Bhúchampaca, <i>Kempfria</i> . | 90 Cantála, <i>Agave</i> ? |
| Bhújambúca. | Capilá. |
| Bhúlavanga, <i>Jussieua</i> . | Capitt'ha, <i>Limonia</i> . |
| Bhurandí, <i>Ipomæa</i> ? | Caranjaca, a new genus. |
| Bhúrja. | 95 Caravélla, <i>Cleome</i> ? |
| 60 Bhústrína, <i>Andropogon</i> ? | Caravì, <i>Laurus</i> . |
| Bhútavésì, <i>Nyctanthes</i> . | Caravíra, <i>Nerium</i> . |
| Berberá. | Carमारंगा, <i>Averrhoa</i> . |
| Bimba', <i>Bryonia</i> ? | Carnicára, <i>Pavetta</i> . |
| Bimbicá, the same? | 200 Carparála, <i>Alœ</i> ? |
| 65 Bráhmànì, <i>Ovieda</i> . | Carpásì, <i>Gossypium</i> . |

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| Carpúra, <i>Laurus</i> . | Culaca, <i>Strychnos</i> . |
| Caruna, <i>Citrus</i> . | Culmásha. |
| Céfa, <i>Saccharum</i> . | Cumbha. |
| 5 Cášhmírá. | Cumbhica, <i>Pistia</i> . |
| Cátaca, <i>Strychnos</i> . | 40 Cumuda, <i>Menianthes</i> . |
| Catp'hala, <i>Tabernaemontana</i> . | (Cuñcuma, <i>Crocus</i>) ? |
| Catu. | Cunda, <i>Jasminum</i> . |
| Cémuca. | Curubaca, <i>Barleria</i> . |
| 10 Céfara, <i>Crocus</i> . | Curuntaca. |
| Cétaca, <i>Pandanus</i> . | 45 Curuvaca. |
| Chacralá. | Cus'a, <i>Poa</i> . |
| C'hadira, <i>Mimosa</i> . | Cushmánda, <i>Cucumis</i> ? |
| Ch'hatráca, <i>Agaricus</i> . | Cufumbha, <i>Carthamus</i> . |
| 15 Champaca, <i>Michelia</i> . | Cutaja, <i>Jasminum</i> . |
| Chanaca. | 50 Cuvalaya. |
| Chandá. | Cuvéraca, <i>Swietenia</i> ? |
| Chandana, <i>Santalum</i> . | Dámápana. |
| Chandricá. | Danticá. |
| 20 C'harjúra, <i>Phoenix</i> . | Dhanyáca. |
| Charmacáshá. | 55 Dárima, <i>Punica</i> . |
| Chavaca. | Dási. |
| Chitrá. | Dévadáru, <i>Unona</i> . |
| Chitraca, <i>Plumbago</i> . | Dhatací. |
| 25 Chórapushpi, <i>Scirpus</i> . | Dhustúra, <i>Datura</i> . |
| Ciráta. | 60 Dóná, <i>Artemisia</i> . |
| Códrava. | Drácfhá, <i>Vitis</i> . |
| Córangí. | Durgája'ta, <i>Ophioglossum</i> . |
| Cóvidára, <i>Bauhinia</i> . | Dúrvá, <i>Agrostis</i> . |
| 30 Clítaca. | Dwipatrí, <i>Impatiens</i> . |
| Cramuca. | 65 E'la, <i>Amomum</i> . |
| Críshná. | E'labáluca. |
| Críshnachúra, <i>Poinciana</i> . | Eranda, <i>Ricinus</i> . |
| Cshiráví, <i>Asclepias</i> ? | • Gajápippalí, a new genus? |
| 35 Cshumá, <i>Linum</i> . | Gambhári. |

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| 70 | Gandáñi. | Hilamóchica'. |
| | Gandhara'ja, <i>Gardenia</i> . | Himavatì. |
| | Gandíra, <i>Solanum</i> ? | 5 Hingu, <i>Terebinthus</i> . |
| | Gauríchandra, <i>Hedysa-</i> | Hingulì, <i>Solanum</i> . |
| | <i>rum</i> . | Hinta'la, <i>Elate</i> . |
| | Ghantapa'tali. | Hólicà. . |
| 75 | Gho'nta', <i>Rhamnus</i> . | Jambíra, <i>Citrus</i> . |
| | Gho'shaca'. | 10 Jambu, <i>Eugenia</i> . |
| | Grā'nt'hila. | Jatama'nsì, <i>Valeriana</i> . |
| | Grīnjana, <i>Daucus</i> . | Javà, <i>Terminalia</i> ? |
| | Go'cantaca, <i>Barleria</i> . | Jayap'hala, <i>Myrsica</i> . |
| 80 | Gódha'padì. | Jayantì, <i>Æsebynomene</i> . |
| | Go'dhúma, <i>Triticum</i> . | 15 Icfhu, <i>Saccharum</i> . |
| | Go'sjihva', <i>Elephantopus</i> . | Icfhura. |
| | Gólómí, <i>Agrostis</i> ? | Icfhwa'cu. |
| | Gónarda, <i>Cyperus</i> ? | Jímúta. |
| 85 | Góraeshá'. | Indívara, <i>Tradescantia</i> ? |
| | Gova'cshí. | 20 Jíraca. |
| | Góvara', <i>Eranthemum</i> ? | Jívantì. |
| | Guggulu. | Indrava'rùnì. |
| | Guha'. | Ingudí. |
| 90 | Gunja', <i>Abrus</i> . | Irba'ru. |
| | Guvá'ca, <i>Areca</i> . | 25 I'swaramúla, <i>Aristolochia</i> . |
| | Haimavatì. | Lacucha, <i>Artocarpus</i> ? |
| | Halaca, <i>Nymphæa</i> . | Langalì, <i>Nana</i> ? |
| | Hanu. | Lata'rca, <i>Allium</i> . |
| 95 | Haricus'a, <i>Acanthus</i> . | Iafuna, <i>Allium</i> . |
| | Haridrā', <i>Curcuma</i> . | 30 Lavalt, <i>Averrhoa</i> . |
| | Haridru. | Lavanga, <i>Caryophyllus</i> . |
| | Harítacì, <i>Terminalia</i> . | Lódhra. |
| | Harita'la. | Madana, <i>Pisonia</i> . |
| 200 | Haryānga, <i>Cissus</i> . | Madhúca, <i>Bassia</i> . |
| | Hémapushpíca', <i>Jasmi-</i> | 35 Madhúlaca. |
| | <i>num</i> . | Madhúraca. |
| | Hémasa'gara, <i>Cotyledon</i> . | Madhusìgru, <i>Guilandina</i> . |

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| Maha'ja'li. | Nichula, a new genus. |
| Maha'fwéa. | Níli, <i>Indigofera</i> . |
| 40 Malapu. | 75 Nílotpala, <i>Pontederia</i> . |
| Ma'lati, <i>Jasminum</i> . | Nimba, <i>Melia</i> . |
| Mallica', <i>Nyctanthes</i> . | Niya'ra, <i>Oryza</i> . |
| Ma'naca, <i>Arum</i> ? | Pa'cala. |
| Manda'ra, <i>Erythrina</i> . | Padma, <i>Nymphaea</i> . |
| 45 Ma'rcara. | 80 Pala'ndu, <i>Allium</i> . |
| Marcati. | Pala'fa, <i>Butca</i> . |
| Maricha, <i>Cassia</i> . | Panafa, <i>Artocarpus</i> . |
| Marunma'la'. | Parna'fa, <i>Ocimum</i> . |
| Ma'faparni. | Pa'tali, <i>Bignonia</i> . |
| 50 Ma'fha, <i>Phaseolus</i> . | 85 Pa'tola, <i>Solanum</i> ? |
| Ma'fhandari, <i>Callicarpa</i> . | Paura'. |
| Mafúra. | Pichula, <i>Tamarix</i> . |
| Ma'tulanga, <i>Citrus</i> . | Pílu, <i>Aloe</i> ? |
| Mauri. | Pinya'. |
| 55 Mayúra. | 90 Pippala, <i>Ficus</i> . |
| Muchucunda, <i>Pentapetes</i> . | Pippali, <i>Piper</i> . |
| Mudga. | Píya'la. |
| Mudgaparni. | Pítafa'la. |
| Múlaca, <i>Raphanus</i> . | Placfa, <i>Ficus</i> . |
| 60 Mundaballi, <i>Ipomœa</i> . | 95 Príkaparni. |
| Mura. | Priyangu. |
| Murva', <i>Aletris</i> . | Pótica, <i>Physalis</i> . |
| Muftaca, <i>Schœnus</i> ? | Punarnavà, <i>Boerhaavia</i> . |
| Na'gabala', <i>Sida</i> . | Pundaríca. |
| 65 Na'gaballi, <i>Bauhinia</i> . | 300 Pundra. |
| Na'gacéfara, <i>Mesua</i> . | Púticaraja, <i>Guilandina</i> . |
| Na'gada'na, <i>Artemisia</i> . | Raxtamúla, <i>Oldenlandia</i> . |
| Na'garanga, <i>Citrus</i> . | Ra'ja'daña. |
| Nala, <i>Aristida</i> ? | Rajaní. |
| 70 Nali. | 5 Ra'jicas |
| Na'ranga. | Ra'ftrica'. |
| Na'rice'la, <i>Cocos</i> . | Ra'fna', <i>Ophioxylum</i> ? |

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| Rénuca. | S'iva'. |
| Riddhi. | Sóbha'njana, <i>Guilandina</i> . |
| 10 Rīṣhabha. | 45 Sómatala', <i>Ruta</i> ? |
| Róchana'. | Sómara'jì, <i>Pæderia</i> . |
| Róhita, <i>Punica</i> . | S'olp'ha. |
| Sa'cótaca, <i>Tropis</i> . | • Sónaca, <i>Bignonia</i> . |
| Sabaca'ra, <i>Mangifera</i> . | Srīnga'taca, <i>Trapa</i> . |
| 15 Sahacharī. | 50 S'riparna. |
| Sailéya, <i>Muscus</i> . | St'halapadma, <i>Hibiscus</i> . |
| Sairiyaca, <i>Barleria</i> . | S'uca. |
| Saiva'la. | S'uṭi. |
| S'a'la. | Sunīṣhannaca, <i>Marflea</i> . |
| 20 S'a'lanḥī. | 55 Surabhī. |
| S'a'lmali, <i>Bombax</i> . | Súryamani, <i>Hibiscus</i> . |
| Samanga', 2? | Suvernaca, <i>Cassia</i> . |
| S'ami, <i>Mimosa</i> . | S'ya'ma', a new genus. |
| S'amira, <i>Mimosa</i> . | S'ya'ma'ca. |
| 25 Samudraca, <i>Aquilicia</i> . | 60 Ta'la, <i>Borassus</i> . |
| Sana', <i>Crotalaria</i> . | Ta'lamúlaca, <i>Cochlearia</i> ? |
| Sancarajata', <i>Hedysarum</i> . | Ta'li, <i>Corypha</i> . |
| S'anc'hapushpa, <i>Cæx</i> . | Tama'la, <i>Laurus</i> ? |
| S'ara. | Ta'mbúli, <i>Piper</i> . |
| 30 S'arala. | 65 Ta'mracúta, <i>Nicotiana</i> . |
| Sarana'. | Ta'raca, <i>Anomum</i> ? |
| S'atamúli. | Tarunì, <i>Aloë</i> . |
| S'atapushpa. | Tatpatrí, <i>Laurus</i> . |
| Sa't'hì. | Tila, <i>Sesamum</i> . |
| 35 S'ep'ha'sica', <i>Nyctanthes</i> . | 70 Tilaca. |
| Septala', <i>Nyctanthes</i> . | Tindúca, <i>Diospyros</i> . |
| Septaparna, <i>Echites</i> . | Tinsa, <i>Ebenus</i> ? |
| Serishpa, <i>Sinapis</i> . | Trapusha, <i>Cucumis</i> . |
| S'imbi, <i>Dolichos</i> . | Trayama'na'. |
| 40 Sindhúca, <i>Vitex</i> . | 75 Tīvrīta'. |
| Sirīsha, <i>Alimosa</i> . | Tubarica'. |
| S'ifu, <i>Croton</i> ? | Túla, <i>Morus</i> . |

	Tunga.		Va'stuca, <i>Amaranthus</i> ?
	Udumbara, <i>Ficus</i> .	400	Vafu.
80	Ulapa, <i>Aristida</i> ?		Va'taca.
	Upódica.		Vatsa'dani, <i>Menispermum</i> .
	Urana, <i>Cassia</i> .		Va'yafóli.
	Utpala ?		Vétafa, <i>Barleria</i> .
	Vajradru, <i>Euphorbia</i> .	;	Vétra, <i>Calamus</i> .
85	Valvaja, <i>Andropogon</i> ?		Vichitra', <i>Tragia</i> .
	Vanacéli, <i>Canna</i> .		Vida'ri.
	Vanamudga.		Vidula.
	Vana'rdraca, <i>Costus</i> ?		Virana, <i>Andropogon</i> .
	Vanda', <i>Epidendrum</i> .	10	Vifha'nì.
90	Vanda', <i>Loranthus</i> .		Vifta'raca, <i>Convolvulus</i> .
	Vanda', <i>Viscum</i> .		Vrithi, <i>Oryza</i> .
	Vanda'ca, <i>Quercus</i> .		Vya'ghranac'ha.
	Vans'a, <i>Bambos</i> .		Vya'ghrapa'da.
	Va'rahì.	15	Ya'fa.
95	Vara'ngaca, <i>Laurus</i> .		Yava, <i>Hordeum</i> .
	Va'runa.		Yavafa, <i>Poa</i> ?
	Va'faca, <i>Dianthera</i> .		Yu'cta'rasa'.
	Va'falyà.		Yút'hica', <i>Jasminum</i> .

• *BOTANICAL OBSERVATIONS*

SELECT INDIAN PLANTS*.

BY THE PRESIDENT.

IF my names of plants displease you, says the great *Swedish* botanist, choose others more agreeable to your taste,' and, by this candour, he has disarmed all the criticism, to which as it must be allowed, even the critical parts of his admirable works lie continually open : I avail myself of his indulgence, and am very solicitous to give *Indian* plants their true *Indian* appellations; because I am fully persuaded, that LINNÆUS himself would have adopted them, had he known the learned and ancient language of this country; as he, like all other men, would have retained the native names of *Asiatick* regions and cities, rivers and mountains, leaving friends or persons

* This paper was announced in the specimen of an *Asiatick* Common-place Book, which the President added, in the third volume of these Transactions, to Mr. HARRINGTON's proposal for an improvement of LOCKE's useful plan.

of eminence to preserve their own names by their own merit, and inventing new ones, from distinguishing marks and properties, for such objects only as, being recently discovered, could have had no previous denomination. Far am I from doubting the great importance of perfect *botanical descriptions*; for languages expire as nations decay, and the true sense of many appellatives in every dead language must be lost in a course of ages: but, as long as those appellatives remain understood, a travelling physician, who should wish to procure an *Arabian* or *Indian* plant, and, without asking for it by its learned or vulgar name, should hunt for it in the woods by its *botanical character*, would resemble a geographer, who, desiring to find his way in a foreign city or province, should never inquire by name for a street or a town, but wait with his tables and instruments, for a proper occasion to determine its longitude and latitude.

The plants, described in the following paper by their classical appellations, with their synonyma or epithets, and their names in the vulgar dialects, have been selected for their novelty, beauty, poetical fame, reputed use in medicine, or supposed holiness; and frequent allusions to them all will be found, if the *Sanscrit* language should ever be generally studied, in the popular and sacred poems of the ancient *Hindus*, in their medical books and law tracts, and even in the

Védas themselves: though unhappily I cannot profess, with the fortunate *Swede*, to have seen without glasses all the parts of the flowers, which I have described, yet you may be assured, that I have mentioned no part of them, which I have not again and again examined with my own eyes; and though the weakness of my sight will for ever prevent my becoming a botanist, yet I have in some little degree atoned for that fatal defect by extreme attention, and by an ardent zeal for the most lovely and fascinating branch of natural knowledge.

Before I was acquainted with the method pursued by VAN RHEEDE, necessity had obliged me to follow a similar plan on a smaller scale; and, as his mode of studying botany, in a country and climate by no means favourable to botanical excursions, may be adopted more successfully by those who have more leisure than I shall ever enjoy, I present you with an interesting passage from one of his prefaces, to which I should barely have referred you, if his great work were not unfortunately confined, from its rarity, to very few hands. He informs us in an introduction to his third volume, "that several "*Indian* physicians and *Bráhmens* had composed "by his order," a catalogue of the most celebrated plants, which they distributed according to their times of blooming and seeding, "to the configuration of their leaves, and to

“ the forms of their flowers and fruit ; that, at
“ the proper seasons he gave copies of the list
“ to several intelligent men, of whom he sent
“ parties into different forests, with instructions
“ to bring him, from all quarters, such plants
“ as they saw named, with their fruit, flow-
“ ers, and leaves, even though they should
“ be obliged to climb the most lofty trees
“ for them ; that three or four painters, who
“ lived in his family, constantly and accu-
“ rately delineated the fresh plants, of which, in
“ his presence, a full description was added ;
“ that, in the meanwhile, he had earnestly re-
“ quested all the princes and chiefs on the
“ *Malabar* coast to send him such vegetables, as
“ were most distinguished for use or for elegance,
“ and that not one of them failed to supply his
“ garden with flowers, which he sometimes
“ received from the distance of fifty or sixty
“ leagues ; that when his herbarists had collected
“ a sufficient number of plants, when his
“ draughtsmen had sketched their figures, and
“ his native botanists had subjoined their de-
“ scription, he submitted the drawings to a little
“ academy of *Pandits*, whom he used to con-
“ vene for that purpose from different parts of
“ the country ; that his assembly often consisted
“ of fifteen or sixteen learned natives, who vied
“ with each other in giving correct answers to

“ all his questions concerning the names and
“ virtues of the principal vegetables, and that he
“ wrote all their answers in his note-book ;
“ that he was infinitely delighted with the can-
“ did, modest, amicable, and respectful debates
“ of those pagan philosophers, each of whom
“ adduced passages from ancient books in sup-
“ port of his own opinion, but without any
“ bitterness of contest or the least perturba-
“ tion of mind ; that the texts which they
“ cited were in verse, and taken from books,
“ as they positively asserted, more than four
“ thousand years old ; that the first couplet of
“ each section in those books comprised the sy-
“ nonymous terms for the plant, which was the
“ subject of it, and that, in the subsequent
“ verses, there was an ample account of its
“ kind or species, its properties, accidents, qua-
“ lities, figure, parts, place of growth, time of
“ flowering and bearing fruit, medical virtues,
“ and more general uses ; that they quoted those
“ texts by memory, having gotten them by
“ heart in their earliest youth, rather as a play
“ than a study, according to the immemorial
“ usage of such *Indian* tribes, as are destined by
“ law to the learned professions ; and on that
“ singular law of tribes, peculiar to the old
“ *Egyptians* and *Indians*, he adds many solid and
“ pertinent remarks.” Now when we com-

plain, and myself as much as any, that we have no leisure in *India* for literary and philosophical pursuits, we should consider, that VAN RHEEDE was a nobleman at the head of an *Indian* government in his time very considerable, and that he fully discharged all the duties of his important station, while he found leisure to compile, in the manner just described, those twelve large volumes, which LINNÆUS himself pronounces *accurate*.

I. TA'RACA:

VULG. *Tárac*.

LINN. *Amonum*.

CAL. *Perianth* spathe-like, but fitting on the germ; tubular, one leaved, broken at the mouth into few irregular, sharp toothlets; downy, striated; in part coloured, in part semipellucid.

COR. One-petaled, villous. *Tube* short, funnel form. *Border* double. *Exterior* three parted; coloured like the calyx; *divisions* oblong, striated, internally concave, rounded into slipperlike bags; the two *lower* divisions, equal, rather deflected; the higher, somewhat longer, opposite, bent in a contrary direction, terminated with a long point. *Interior*, two-lipped (unless the *upper* lip be called the filament); *under* lip revolute, with a tooth on each side near the base; two-parted from the

middle; *divisions* axe-form, irregularly end-nicked. *Nectaries*, two or three honey-bearing, light brown, glossy bodies at the base of the *under* lip, just below the teeth; erect, awled, converging into a small cone.

STAM. *Filament* (unless it be called the *upper* lip of the *interior border*), channelled within, sheathing the style; dilated above into the large fleshy *anther*, if it can justly be so named. *Anther* oblong, externally convex and entire, internally flat, divided by a deep furrow; each *division*, marked with a perpendicular pollen-bearing line, and ending in a membranous point.

PIST. *Germ* beneath, protuberant, roundish, obscurely three sided, externally soft with down. *Style* threadform, long as the *filament*, the top of which nearly closes round it. *Stigma* headed, perforated.

PER. *Capsule* (or *capsular berry*, not bursting in a determinate mode) oblong-roundish, three striped, smooth, crowned with the permanent calyx and corol; with a brittle coat, almost black without, pearly within.

SEEDS, lopped, with three or four angles, very smooth, enclosed within three oblong, rounded, soft, membranous integuments, conjoined by a branchy receptacle; in each parcel, four or five.

Interior Border of the corol, pink and white; *under lip*, interhally milk-white, with a rich carmine stripe in each of its divisions. *Seeds* aromack, hotter than *Cardamoms*. *Leaves* alternate, sheathing, oblong, pointed, keeled, most entire, margined, bright grass-green above; very smooth; pale sea-green below. *Stem* compressed, three or four feet long, bright pink near its base, erect, ending in a beautiful panicle. *Peduncles* many flowered; *bracts* few lance-linear, very long, withering. *Root* fibrous, with two or three bulbous knobs, light brown and spongy within, faintly aromack.

Although the *Taraca* has properties of an *Amomum*, and appears to be one of those plants, which RUMPHIUS names *Globba*, yet it has the air of a *LANGUAS*, the *fruit*, I believe; of a *RENEALMIA*, and no exact correspondence with any of the genera so elaborately described by KOENIG: its *essential character*, according to RETZ, would consist in its *two parted interior border*, its *channelled filament*, and its *two-leafed anther with pointed divisions*.

2. BHU'CHAMPAÇA:

VULG. *Bhúchampac*.

LINN. Round-rooted KÆMPFERIA.

CAL. Common *Spathe* imbricated, many flowered; partial. *Perianth* one leaved, small, thin, obscure.

COR. One petaled. *Tube* very long, slender, sub-cylindric below, funnel form above, somewhat incurved. *Border* double, each three parted: *exterior*, divisions lanced, acute, dropping; *interior*, two higher divisions erect, lapping over, oblong, pointed, supporting the back of the anther; *lower* division, expanding, deflected, two-cleft; *subdivisions* broad, axeform, irregularly notched, endnicked, with a point.

STAM. *Filament* adhering to the throat of the corol, oblong below, enlarged, and two lobed above, coloured. *Anther* double, linear, higher than the mouth of the tube, fixed on the lower part of the filament, conjoined round the pistil, fronting the two cleft division of the border.

PIST.. *Germ* very low near the root, attended with a *nectareous* gland. *Style* capillary, very long. *Stigma* funnel form below, compressed above; fanshaped, two lipped, downy, emerging a little from the conjoined *anther*.

PER, and SEEDS not yet seen.

Scape thickish, very short. *Corol*. richly fragrant; *tube* and *exterior border* milkwhite, divisions dropping, as if sensitive, on the slightest touch, and soon yielding to the pressure of the air; *interior border* purple, the higher divisions diluted, the lower deeply coloured within, variegated near the base.

One or two flowers blow every morning in *April* or *May*, and wither entirely before sunset: after the *spike* is exhausted, rise the large *leaves* keeled, broad-lanced, membranous nerved. . *Root* with many roundish, or rather spindle-shaped *bulbs*.

This plant is clearly the *Bencápo* of RHEEDE, whose native assistant had written *Bbu* on the drawing, and intended to follow it with *Champá*: the spicy odour and elegance of the flowers, induced me to place this *KÆMPFERIA* (though generally known) in a series of select *Indian* plants; but the name *Ground CHAMPAC* is very improper, since the true *Champaca* belongs to a different order and class; nor is there any resemblance between the two flowers, except that both have a rich aromatick scent.

Among all the *natural orders*, there is none, in which the genera seem less precisely ascertained by clear *essential characters*, than in that, which (for want of a better denomination) has been called *scitamineous*; and the judicious RETZ, after confessing himself rather dissatisfied with his own generick arrangement, which he takes from the *border* of the corol, from the *stamen*, and principally from the *anther*, declares his fixed opinion, that *the genera in this order will never be determined with absolute certainty*

until all the scitamineous plants of India shall be perfectly described.

3. SE'P'HALICA:

SYN. *Suvabá, Nirgudá, Nilicá, Niváricá.*

VULG. *Singabár, Nibari:*

LINN. Sparrowful NYCTANTHES.

In all the plants of this species examined by me, the *calyx* was villous; the *border* of the corol white, five-parted, each division unequally subdivided; and the *tube* of a dark orange-colour; the *stamens* and *pistil* entirely within the *tube*; the *berries*, twin, compressed, capsular, two-celled, margined, inverse-hearted with a point. This gay tree (for nothing sorrowful appears in its nature) spreads its rich odour to a considerable distance every evening; but at sunrise it sheds most of its *night-flowers*, which are collected with care for the use of perfumers and dyers. My *Pandits* unanimously assure me, that the plant before us is their *Sép'hálicá*, thus named because *bees* are supposed to *sleep* on its blossoms; but *Nilicá* must imply a blue colour; and our travellers insist, that the *Indians* give the names of *Párijática* or *Párijáta* to this useful species of *Nyctanthes*: on the other hand, I know that *Párijáta* is a name given to flowers of a genus totally different; and there may be a variety of this with *blueish* corols; for it is ex-

preſſly declared, in the *Amarcoſh*, that, “when
“ the *Sép'bálica* has white flowers, it is named
“ *Swétasuraſá*, and *Bhútavés'i*.”

4. α. MAGHYA :

SYN. *Cunda*.

LINN. *Nyctanthes Sambac*.

See RHEEDE : 6 H. M. tab. 54.

Flowers exquisitely white, but with little or
no fragrance ; *ſtem*, *petioles*, and *calyx* very
downy ; *leaves* egged, acute ; below rather
hearted.

β. SEPTALA :

SYN. *Navamallicá*, *Navamálicá*.

VULG. *Béla*, *Muta-béla*.

BURM. *Many-flowered Nyctanthes*.

See 5 RUMPH. tab. 30. 6 H. M. tab. 50.

The bloſſoms of this variety are extremely
fragrant. *Zambak* (ſo the word ſhould be
written) is a flower to which *Persian* and *Arabian*
poets frequently allude.

5. MALLICA :

SYN. *Trinaſúlya*, *Malli*, *Bhúpadí*, *Satabhíru*.

VULG. *Dési-béla*.

LINN. *Wavy-leaved NYCTANTHES*.

Berry globular, ſimple, one-celled, SEED large,
ſingle, globular.

According to RHEEDE, the *Bráhmens* in the
weſt of *India* diſtinguiſh this flower by the word

Castúri, or *musk*, on account of its very rich odour.

6. A'SP'HOTA' :

SYN. *Vanamallí*.

VULG. *Banmalica*.

LINN. Narrow-leaved NYCTANTHES.

The *Indians* consider this as a variety of the former species ; and the flowers are nearly alike. *Obtuse-leaved* would have been a better specific name : the *petals*, indeed, are comparatively narrow, but not the leaves. This charming flower grows wild in the forests ; whence it was called *Vanajáti* by the *Bráhmens*, who assisted RHEEDE ; but the *Játi*, or *Málati*, belongs, I believe, to the next genus.

7. MA'LATI' : .

SYN. *Sumaná*, *Játi*.

VULG. *Málti*, *Játi*, *Chambéli*.

LINN. Great-flowered JASMIN.

Buds blushing ; *corol*, mostly with purplish edges. *Leaves* feathered with an odd one ; two or three of the terminal *leaflets* generally confluent.

Though *Málati* and *Játi* are synonymous, yet some of the native gardeners distinguish them ; and it is the *Játi* only, that I have examined. COMMELINE had been informed, that the *Javans* give the name of *Máletí* to the *Zambak*,

which in *Sanscrit* is called *Navamallikā*, and which, according to RHEEDE, is used by the *Hindus* in their sacrifices; but they make offerings of most odoriferous flowers, and particularly of the various *Jasmins* and *Zambaks*.

8. YUT'HICA':

SYN. *Māgadhi*, *Ganicā*, *Ambasht'hā*, *Yūt'hī*.

VULG. *Jūt'hī*, *Jūi*.

LINN. *Azorick JASMIN*.

Leaves opposite, three'd. *Branchlets* cross-armed.

Umbels three-flowered. *Corols* white, very fragrant. The yellow *Yūt'hicā*, say the *Hindus*, is called *Hemapushpicā*, or *golden-flowered*; but I have never seen it, and it may be of a different species.

9. AMLICA':

SYN: *Tintidi*, *Chinchā*.

VULG. *Tintiri*; *Tamru'lbindi*, or *Indian Date*.

LINN. *Tamarindus*.

The flowers of the *Tamarind* are so exquisitely beautiful, the fruit so salubrious, when an acid sherbet is required, the leaves so elegantly formed and arranged, and the whole tree so magnificent, than I could not refrain from giving a place in this series to a plant already well known: in all the flowers, however, that I have examined, the coalition of the stamens appeared so invariably, that the *Tamarind* should be removed, I think, to the *sixteenth* class; and it

were to be wished, that so barbarous a word as *Tamarindus*, corrupted from an *Arabick* phrase absurd in itself, since the plant has no sort of resemblance to a date-tree, could without inconvenience be rejected, and its genuine *Indian* appellation admitted in its room.

IO. SARA : or *Arrow-cane*.

SYN. *Gundra*, or Playful ; *Téjanaca*, or Acute.

VULG. *Ser*, *Serberi*.

LINN. *Spontaneous* SACCHARUM.

CAL. *Glume* two-valved ; *valves*, oblong-lanced, pointed, subequal, girt with silky diverging hairs, exquisitely soft and delicate, * more than twice as long as the flower.

COR. One-valved, acute, fringed.

STAM. *Filaments* three, capillary ; *Anthers*, oblong, incumbent.

PIST. *Germ*s very minute, *styles* two, thread-form. *Stigmas* feathery.

FLOWERS on a very large terminal *panicle*, more than two feet long, in the plant before me. and one foot across in the broadest part ; consisting of numerous compound *spikes*, divided into *spikelets*, each on a capillary jointed rachis, at the joints of which are the flowerets alternately sessile and pedicelled. *Common peduncle* many-furrowed, with reddish joints. *Valvelet* of the corol purple or light red ; *stamens* and *pistils* ruddy ; *stigmas*, purple ;

pedicles, of a reddish tint ; finely contrasted with the long silvery beard of the calyx. *Leaves* very long, striated, minutely sawed; teeth upwards; keel smooth white, within; sheathing the culm; the mouths of the sheaths thick, set with white hairs. *Culm* above twenty feet high; very smooth, round and light; more closely jointed and woody near the root, which is thick and fibrous; it grows in large clumps, like the *Venu*. This beautiful and superb grass is highly celebrated in the *Puranas*, the Indian God of War, having been born in a grove of it, which burst into a flame; and the gods gave notice of his birth to the nymph of the *Pleiads*, who descended and suckled the child, thence named *Cárticéya*. The *Cásá*, vulgarly *Castá*, has a shorter culm, leaves much narrower, longer and thicker hairs, but a smaller panicle, less compounded, without the purplish tints of the *Sara*: it is often described with praise by the *Hindu* poets, for the whiteness of its blossoms, which give a large plain, at some distance, the appearance of a broad river. Both plants are extremely useful to the *Indians*, who harden the internodal parts of the culms, and cut them into implements for writing on their polished paper. From

the *munja*, or culm, of the *Sara* was made the *maunjì*, or holy thread, ordained by MENU to form the sacerdotal girdle, in preference even to the *Cui'a*-grass.

II. DÚRVA':

SYN. *Satapariçá*, *Sabhapariçá*, *Bhārgaví*,
Rudrá, *Anantá*.

VULG. *Dúb*.

KOEN. AGROSTIS *Linearis*.

Nothing essential can be added to the mere botanical description of this most beautiful grass; which VAN RHEEDE has exhibited in a coarse delineation of its leaves only, under the barbarous appellation of *Belcaraga*: its flowers, in their perfect state, are among the loveliest objects in the vegetable world, and appear, through a lens, like minute rubies and emeralds in constant motion from the least breath of air. It is the sweetest and most nutritious pasture for cattle; and its usefulness added to its beauty induced the *Huda*, in their earliest ages, to believe, that it was the mansion of a benevolent nymph. Even the *Vída* celebrates it; as in the following text of the *Át'barvāna*: "May
" *Dúrva*, which rose from the water of life,
" which has a hundred roots and a hundred
" stems, efface a hundred of my sins and pro-
" long my existence on earth for a hundred



Clusia
lyrata Lamiaceae of *Clusia* Lamiaceae

“ years !” The plate was engraved from a drawing in Dr. ROXBURGH’S valuable collection of *Indian grasses*.

12. CUS’A ; or CUS’HA :

SYN. *Cut’ha*, *Darb’ha*, *Pavitrâ*.

VULG. *Cusha*.

KOEN. *Poa Cynosuroides*.

Having never seen this most celebrated grass in a state of perfect inflorescence, I class it according to the information, which Dr. ROXBURGH has been so kind as to send me : the *leaves* are very long, with margins acutely sawed downwards but smooth on other parts, even on the keels, and with long points, of which the extreme acuteness was proverbial among the old *Hindus*. Every law-book, and almost every poem, in *Sanscrit* contains frequent allusions to the holiness of this plant ; and, in the fourth *Vêda*, we have the following address to it at the close of a terrible incantation : ‘ Thee, O *Darb’ha*, the learned proclaim a divinity not subject to age or death ; thee they call the armour of INDRA, the preserver of regions, the destroyer of enemies ; a gem that gives increase to the field. At the time, when the ocean resounded, when the clouds murmured and lightnings flashed, then was *Darb’ha* produced, pure as a drop of fine gold.’ Some of the *leaves* taper to a most acute, evanescent point ; whence the

Pandits often say of a very sharp-minded man, that his intellects are, *acute as the point of a Cus'a leaf*.

13. BANDHU'CA:

SYN. *Raċaca*; *Bandhujivaca*.

VULG. *Bāndhūtī*, *Ranjay*.

LINN. Scarlet IXORA.

CAL. *Perianth* four-parted, permanent; *divisions*, coloured, erect, acute.

COR. One-petaled, funnel-form. *Tube*, cylindrick, very long, slender, somewhat curved. Border four-parted; *divisions*, egged, acute, deflected.

STAM. *Filaments* four, above the throat very short, incurved. *Anthers* oblong, depressed.

PIST. *Germ* roundish, oblate beneath. *Style*, threadform, long as the tube. *Stigma* two-cleft, just above the throat; *divisions*, externally curved.

PER.

SEEDS:

FLOWERS bright crimson-scarlet, umbel-fascicled. *Leaves* oval, cross-paired, half-stem-clasping, pointed; pale below, dark green above, leathery, clothing the whole plant. *Stipules* between the opposite leaves, erect, linear. *Stem* russet, channelled.

The *Bandūca*-flower is often mentioned by the best *Indian* poets; but the *Pandits* are

strangely divided in opinion concerning the plant, which the ancients knew by that name. RA'DHA'CA'NT brought me, as the famed *Bandbúca*, some flowers of the *Doubtful PAPAVER*; and his younger brother RAMA'CA'NT produced on the following day the *Scarlet IXORA*, with a beautiful couplet in which it is named *Bandbúca*: soon after, SERVÓRU showed me a book, in which it is said to have the vulgar name *Dóp'bariya*, or *Meridian*; but by that *Hindustáni* name, the *Muselmans* in some districts mean the *Scarlet PENTAPETES*, and, in others, the *Scarlet HIBISCUS*, which the *Hindus* call *Súryamani*, or *Gem of the Sun*. The last-mentioned plant is the *Siasmin* of RHEEDE, which LINNÆUS, through mere inadvertence, has confounded with the *Scarlet Pentapetes*, described in the *fifty-sixth* plate of the same volume. I cannot refrain from adding, that no *Indian* god was ever named *IXORA*; and that *Is'wara*, which is, indeed, a title of *SIVA*, would be a very improper appellation of a plant, which has already a classical name.

14. CARNICA'RA :

SYN. *Drumótpala*, *Perivyádba*.

VULG. *Cáncrá*; *Cat'bachampá*.

LINN. *Indian PAVETTA*.

It is wonderful, that the *Pandits* of this province, both priests and physicians, are unable to

bring me the flower, which CA'LIDA'SA mentions by the name of *Carnicára*, and celebrates as a flame of the woods: the lovely *Pavetta*, which botanists have sufficiently described, is called by the *Bengal* peasants *Cáncrà*, which I should conclude to be a corruption of the *Sanscrit* word, if a comment on the *Amaracósh* had not exhibited the vulgar name *Cat'ba-champá*; which raises a doubt, and almost inclines me to believe, that the *Carnicára* is one of the many flowers, which the natives of this country improperly called wild *Champacs*.

15. MA'SHANDARÌ:

VULG. *Mafandari* in *Bengal*; and *Bastra* in *Hindustán*.

LINN. *American* CALLICARPUS; yet a native of *Java*?

CAL. *Perianth* one-leaved, four-parted; *Divisions* pointed, erect.

COR. One-petaled, funnel-form; *border* four-cleft.

STAM. *Filaments* four, thread-form, coloured, longer than the corol. *Anthers* roundish, incumbent.

PIST. *Germ* above, egged. *Style* thread-form, coloured, longer than the stamens. *Stigma* thickish, gaping.

PER.

SEEDS,

FLOWERS minute, bright lilack, or light purple, extremely beautiful. • *Panicles* axillary one to each leaf, two-forked, very short in comparison of the leaves, downy. *Braets* awled, opposite, placed at each fork of the panicle. *Leaves* opposite, petioled, very long, egged, veined, pointed, *obtusely-notched*, bright green and soft above, pale and downy beneath. *Branches* and *petiols* hoary with down. *Shrub*, with flexible branches; growing wild near *Calcutta*: its *root* has medicinal virtues, and cures, they say, a cutaneous disorder called *másba*, whence the plant has its name. Though the leaves be not sawed, yet I dare not pronounce the *species* to be new. See a note on the *Hoary* CALLICARPUS, • § RETZ. *Fascic.* p. 1. n. 19.

16. SRINGA'TA:

SYN. *S'rīngátaca*.

VULG. *Singhára*.

LINN. Floating TRAPA.

I can add nothing to what has been written on this remarkable water-plant; but as the ancient *Hindus* were so fond of its *nut* (from the *horns* of which, they gave a name to the plant itself), that they placed it among their lunar constellations, it may certainly claim a place in a series of *Indian* vegetables.

17. CHANDANA:

SYN. *Gandhasára, Malayaja, Bhadras'ri.*

VULG. *Chandan, Sandal, Sanders.*

LINN. True *Santalum*; more properly *Sandalum*.

SEED large, globular, smooth.

Having received from Colonel FULLARTON many seeds of this exquisite plant, which he had found in the thickets of *Midnapúr*, I had a sanguine hope of being able to describe its flowers, of which RUMPHIUS could procure no account, and concerning which there is a singular difference between LINNÆUS and BURMAN the younger, though they both cite the same authors, and each refers to the works of the other; but the seeds have never germinated in my garden, and the *Chandan* only claims a place in the present series, from the deserved celebrity of its fragrant wood, and the perpetual mention of it in the most ancient books of the *Hindus*, who constantly describe the best sort of it as flourishing on the mountains of *Malaya*. An elegant *Sanscrit* stanza, of which the following *Version* is literally exact, alludes to the popular belief, that the *Véntus*, or *bambus*, as they are vulgarly called, often take fire by the violence of their collision, and is addressed, under the allegory of a 'sandal-tree to a virtuous man dwelling in a town inhabited by contending factions: "De-
" light of the world, beloved CHANDANA, stay

“ no longer in this forest, which is overspread
 “ with rigid pernicious *Vans'as*, whose hearts
 “ are unsound; and who, being themselves con-
 “ founded in the scorching stream of flames
 “ kindled by their mutual attrition, will consume
 “ not their own families merely, but this whole
 “ wood.” The original word *durvans'a* has a
 double sense, meaning both a dangerous *bambu*,
 and a man with a mischievous *offspring*. Three
 other species or varieties of *Chandan* are men-
 tioned in the *Amaracósha*, by the names *Taila-*
parnica, *Gós'irsha*, and *Herichandana*: the red
 sandal (of which I can give no description) is
 named *Cuchandana* from its inferior quality,
Ranjana and *Raēta* from its colour, and *Tila-*
parni or *Patrānga* from the form of its leaves.

18. CUMUDA:

SYN. *Cairava*.

VULG. Ghain-chú.

RHEEDE: *Tsjeroea Cit* Ambel. 11 H. M. t. 29.

LINN. MENIANTHES?

CAL. Five-parted, longer than the tube of the
 corol, expanding, permanent; *divisions*, awled.

COR. One-petaled. *Tube*, rather belled; *bor-*
der five-parted; *divisions* oblong, wavy on the
 margin; a longitudinal wing or foldlet in the
 middle of each. The mouth and whole inte-
 rior part of the corol shaggy.

STAM. *Filaments* five, awled, erect; *Anthers* twin, converging; five, alternate, shorter, sterile.

PIST. *Germ* egged, very large in proportion; girt at its base with five roundish glands. *Style* very short, if any. *Stigma* headed.

PER. *Capsule* four-celled, many-seeded.

SEEDS round, compressed, minute, appearing rough, with small dots or points.

LEAVES hearted, subtargeted, bright green on one side, dark russet on the other. *Flowers* umbel fascicled, placed on the stem, just below the leaf. *Glands* and *Tube* of the corol yellow; *border* white; both of the most exquisite texture: *Cumuda*, or Delight of the Water, seems a general name for beautiful aquatick flowers; and among them, according to VAN RHEEDE, for the *Indian Menianthes*; which this in part resembles. The *divisions* of the corol may be called *three-winged*: they look as if covered with silver frost.

19. CHITRACA:

SYN. *Pá'p'in*, *Vakni*, and all other names of *Fire*.

VULG. *Chita*, *Cbiti*, *Chitrá*.

LINN. PLUMBAGO of *Silán*.

CAL. *Perianth* one-leaved, egg-oblong, tubular, five-sided; rugged, interspersed with mi-

nute pedicelled glands, exuding transparent glutinous droplets; erect, closely embracing the tube of the corol; *mouth* five-toothed; *base* protuberant with the valves of the nectary.

COR. One-petaled, funnel-form. *Tube* five-angled, rather incurved, longer than the calyx. *Border* five-parted, expanding. *Divisions* inverse, egg-oblong, pointed, somewhat keeled. *Nectary* five-valved, pointed, minute, including the germ.

STAM. *Filaments* five, thread-form, inserted on the valvelets of the nectary, as long as the tube of the corol. *Anthers* oblong, oblique.

PIST. *Germ* egged, very small; at first, when cleared of the nectary, smooth; but assuming, as it swells, five angles. *Style* columnar, as long as the stamens. *Stigma* five-parted, slender.

PER. None, unless we give that name to the five-angled coat of the seed.

SEED one, oblong, obscurely five-sided, inclosed in a coat.

Racemes viscid, leafy. *Calyx* light green. *Corol* milkwhite. *Anthers* purple, seen through the pellucid tube. *Leaves* alternate, egged, smooth, pointed, half sheathing, partly waved, partly entire; *floral leaves*, similar, minute. *Stem* flexible (climbing), many-angled, joined

at the rise of the leaves. *Root* caustick; whence the name *Vāhni*, and the like. *Chitraca* means *attracting the mind*; and any of the *Indian* names would be preferable to *Plumbago*, or *Leadwort*. The species here described, seems most to resemble that of *Seilan*; the *rosy Plumbago* is less common here: the joints of its stems are red; the *bracts* three'd, egged, equal pointed, coloured.

20. CĀMALATĀ:

SYN. *Sūrya-cānti*, or *Sunshine*, 11. H. M. t. 60.

VULG. *Cām-latā*, *Ishk-pichab*.

LINN. IPOMOEA *Quamoclit*.

The plant before us is the most beautiful of its order, both in the colour and form of its leaves and flowers; its elegant blossoms are *celestial rosy red*, *love's proper hue*, and have justly procured it the name of *Cāmalatā*, or *Love's Creeper*, from which I should have thought *Quamoclit* a corruption, if there were not some reason to suppose it an *American* word: *Cāmalatā* may also mean a mythological plant, by which all *desires* are granted to such as inhabit the heaven of *INDRA*; and, if ever flower was worthy of *paradise*, it is our charming *Ipomoea*. Many species of this genus, and of its near ally the *Convolvulus*, grow wild in our *Indian* provinces, some spreading a purple light

over the hedges, some snowwhite with a delicate fragrance; and one breathing after sunset the odour of cloves; but the two genera are so blended by playful nature, that very frequently they are undistinguishable by the *corols* and *stigmas*: for instance, the *Mundavalli*, or *Beautiful Climber*, of RHEEDE (of which I have often watched the large spiral buds, and seen them burst into full bloom) is called *Ipomoea* by LINNÆUS, and *Convolvulus* (according to the Supplement) by KÆNING; and it seems a shade between both. The divisions of the *perianth* are egg-oblong, pointed; free above, intricated below; its *corol* and *tube*, those of an *Ipomoea*; its *filaments* of different lengths, with *anthers* arrowed, jointed above the barbs, furrowed, half-incumbent; the *stigmas*, two globular heads, each globe an aggregate of minute roundish tubercles; the *stem* not quite smooth, but here and there bearing a few small prickles; the very large *corol* exquisitely white, with greenish ribs, that seem to act as muscles in expanding the contorted bud; its *odour* in the evening very agreeable; less strong than the primrose and less faint than the lily. The clove-scented creeper, which blows in my garden at a season and hour, when I cannot examine it accurately, seems of the same genus, if not of the same species, with the *Mundavalli*.

21. CADAMBA :

SYN. *Nîpa*, *Priyaca*, *Halipriya*.VULG. *Cadamb*, *Cadam*.LINN. Oriental *Nauclea*.

To the botanical description of this plant I can add nothing, except that I always observed a minute five-parted *calyx* to each floret, and that the *leaves* are oblong, acute, opposite, and transversely nerved. It is one of the most elegant among *Indian* trees in the opinion of all who have seen it, and one of the holiest among them in the opinion of the *Hindus*: the poet CALIDA'S alludes to it by the name of *Nîpa*; and it may justly be celebrated among the beauties of summer, when the multitude of aggregate flowers, each consisting of a *common receptacle* perfectly globular and covered uniformly with gold-coloured florets, from which the white thread-form *styles* conspicuously emerge, exhibits a rich and singular appearance on the branchy trees decked with foliage charmingly verdant. The flowers have an odour, very agreeable in the open air, which the ancient *Indians* compared to the scent of new *wine*; and hence they call the plant *Halipriya*, or *beloved by HALIN*, that is, by the third RA'MA, who was evidently the BACCHUS of *India*.

22. GANDÎRA :

SYN. *Samashtî'bilâ*, *Lavana-bhantâca*,

VULG. *Lona-bbant*; *Ins*; *Sulatiyà*.

LINN. SOLANOM. Is it the *Verbascum*-leaved?

CAL. *Perianth* one-leaved, cup-form or belled?

Obscurely five-cleft, downy, pale, frosted, permanent. *Divisions* egg-ed, erect, pointed, very villous.

COR. One-petaled. *Tube* very short. *Border* five-parted. *Divisions* oblong, pointed, expanding, villous.

STAM. *Filaments* five, most short, in the mouth of the tube. *Anther's* oblong, furrowed, converging, nearly coalescent, with two large pores gaping above.

PIST. *Germ* roundish, villous. *Style* thread-form, much longer than the stamens. *Stigma* obtuse-headed.

PER. *Berry* roundish, dotted above, hoary, divided into cells by a fleshy *receptacle* with two, or three, wings.

SEEDS very many, roundish, compressed, nestling.

LEAVES alternate, egg-oblong, pointed, rather wavy on the margin, delicately fringed with down; darker and very soft above, paler below with protuberant veins, downy on both sides, mostly decurrent on the long hoary petioles.

STEM shrubby, scabrous with tubercles, unarmed. *Flowers* umbel-fascicled. *Corols* white.

Antber, yellow. *Peduncles* and *pedicels* hoary with deciduous frost.

This plant is believed to contain a quantity of *lavana*, or *salt*, which makes it useful as a manure; but the single word *Bhāntāca*, vulgarly *Bhānt*, means the *Clerodendrum*, which (without being *unfortunate*) beautifies our *Indian* fields and hedges with its very black *berry* in the centre of a bright-red, expanding, permanent calyx. The charming little bird *Chatráca*, commonly called *Chattárya* or *Tuntuni*, forms its wonderful nest with a leaf of this downy *Solanum*, which it sews with the silk-cotton of the *Seven-leaved BOMBAX*, by the help of its delicate, but sharp, bill: that lovely bird is well known by the *Einnean* appellation of MOTACILLA *Sartoria*, properly *Sartrix*, but the figures of it, that have been published, give no idea of its engaging and exquisite beauty.

23. SAMUDRACA;

SYN. *Dbóla-samudra*.

VULG. *Dból-samudr*.

LINN. *Aquilicia*; but a new species.

CAL. *Perianth* one-leaved, funnel-shaped, five-toothed, short, the *teeth* closely pressing the corol; permanent.

COR. *Petals* five, egg-oblong, sessile, greenish; acute, curved inwards with a small angled concave appendage. *Nectary* tubular, fleshy,

five-parted, yellowish ; *divisions*, egg-oblong, doubled, compressed, like minute bags with inverted mouths ; enclosing the *germ*.

STAM. *Filaments* five, smooth and convex externally, bent into the top of the *nectary*, between the divisions or scales, and compressing it into a globular figure. *Antbers* arrowed ; the points hidden within the nectary, surrounding the *stigma* ; the barbs without, in the form of a star.

PIST. *Germ* roundish. *Style* cylindrick. *Stigma* obtuse.

PER. *Berry* roundish, flattened, naveled, longitudinally furrowed, mostly five-celled.

SEEDS solitary, three-sided, externally convex. *Cymes* mostly three-parted. *Stem* deeply channeled, jointed, two-forked. *Peduncles* also jointed and channeled. *Fruclification* bursting laterally, where the stem sends forth a petiol. *Berries* black, watry. *Leaves* alternate, except one terminal pair ; hearted, pointed, toothed ; twelve or fourteen of the teeth shooting into lobes ; above, dark green ; below, pale, ribbed, with processes from the petiol, and reticulated with protuberant veins ; the full-grown leaves, above two feet long from the apex, and nearly as broad toward the base ; many of them rather targetted : this new species may be called *large-leaved*,

or *AQUILICIA Samudracá*. The species described by the younger BURMAN, under the name of the *Indian STAPHYLEA*, is not uncommon at *Críṣṇa-nagar*; where the peasants call it *Cácajanghá*, or *Crow's foot*: if they are correct, we have erroneously supposed the *Cóing* of the modern *Bengalese* to be the *Cácángi* of the ancient *Hindus*. It must not be omitted, that the stem of the *Aquilicia Sambucina* is also channeled, but that its *fructification* differs in many respects from the descriptions of BURMAN and LINNÆUS; though there can be no doubt as to the identity of the genus.

24. SO'MARA'JI:

SYN. *Avalguja*, *Suballi*, *Sómaballicá*, *Cálaméshì*, *Críṣṇanáphalá*, *Vácuchí*, *Vágujì*, *Pútip'hallì*.

VULG. *Sómráj*, *Bacuchi*.

LINN. *Fetid PÆDERIA*.

The character as in LINNÆUS, with few variations. *Calyx* incurved. *Corol* very shaggy within. *Style* two-cleft, pubescent; *divisions* contorted. *Stem* climbing, smooth. *Leaves* opposite, long-petioled; the lower ones oblong, hearted; the higher, egg-oblong; veined, with a wavy margin. *Panicles* axillary (except the highest), cross-armed. *Flowers* beautiful to the sight, crimson, with milk-

white edges, resembling the *Dianthus* vulgarly called *Sweet William*, but resembling it only in form and colours; almost scentless to those who are very near it, but diffusing to a distance a rank odour of carrion. All the peasants at *Crishnā-nagar* called this plant *Somrāj*; but my own servants, and a family of *Bráhmens* from *Tribēni*, gave that name to a very different plant, of the *nineteenth* class, which I took, on a cursory inspection, for a *Prenanthes*.

25. SYA'MA':

SYN. *Gópi*, *Sárivá*, *Anantà*, *Utpalásárivà*, *Gópá*, *Gópálicà*, *Gópavallì*.

VULG. *Syámá-latá*.

RHEEDE: in *Malabar* letters, *Puppál-vallì*.

CAL. *Perianth*, one-leaved, five-toothed, erect, minute, permanent.

COR. One-petaled, salver-form. *Tube*, itself cylindrick, but protuberant in the middle with the germ and anthers; *throat* very vilious. *Border* five-parted; *divisions* very long, lance-linear, spirally contorted, fringed, closed, concealing the fructification.

STAM. *Filaments*, if any, very short. *Anthers*, five, awled, erect, converging at the top.

PIST. *Germ* above, pedicelled, spheroidal, girt with a *nectareous* ring. *Style* threadform, rather awled. *Stigma* simple.

PER. *Capsule* one-celled; one-seeded, roundish, hispid.

SEED oval, very minute, glossy.

Flowers raceme-panicled, greenish-white, very small, scented like those of the hawthorn, but far sweeter; and thence the *Portuguese* called them *honey-flowers*.

Peduncles axillary, rufet; *pedicels* many-flowered. *Branchlets* milky. *Leaves* opposite, lance-oval, pointed at both ends, most entire veined; above dark green; below, pale. *Stipules* linear, axillary, adhering. *Stem* climbing, round, of a rufet hue, rimmed at the insertion of the short *petiols*.

The ripe fruit of this elegant climber, which CA'LIDA's mentions in his poem of the *Seasons*, has been seen by me only in a very dry state; but it seemed that the hispid appearance of the *capsules*, or *berries*, which in a microscope looked exactly like the burrs in VAN RHEEDE's engraving, was caused by the hardened calyxes and fringe of the permanent corols: the *seeds* in each burr were numerous and like black shining sand; for no single pericarp could be disengaged from it, and it is described as *one-seeded* merely from an inspection of the dissected germ. Before I had seen the *fruit*, I thought the *Syama* very nearly connected with the *Shrubby APOCYNUM*, which it resembles in the *leaves*, and in parts of the *corol*.

Five of the SANSKRIT names are strung together, by the author of the *Amaracôsh*, in the following verse; .

Gôpi s'yamá s'arivá syádanantótála sarivá :
and his commentator observes, that the last name was given to the *Sárivá* from the resemblance of its flowers to those of the *Utpala*, which I thence conclude to be a *Menianthes*; especially as it is always described among the Indian water-plants. The other synonymous words are taken from VA'CHASPATI.*

26. A'VIGNA, or *Avinga*:

SYN. *Crişṇapácap'hala*, *Susbénas*, *Caramar-daca*.

VULG. *Caróndà* or *Caraundà* in two dictionaries; in one, *Pûniamalà*.

LINN. • *CARISSA Carandas*.

CAL. *Perianth* five-cleft, acute, very small, coloured, persistent.

COR. One-petaled, funnel-form. *Tube* longish; *throat* swollen by the inclosed anthers. *Border* five-parted; *divisions* oblong; one side of each embracing the next.

STAM. *Filaments* five, extremely short. *Anthers*, oblong, erect.

PIST. *Germ* above, roundish. *Style* thread-form, short, clubbed. *Stigma* narrower, pubescent.

PER. *Berry*, elliptoidal, two-celled.

SEEDS at least seven, oval, compressed, margined. *Flowers* milkwhite, jasmín-like. *Fruit* beautiful in form and colour, finely shaded with carmine and white; agreeably acid. *Branches* two-forked. *Leaves* opposite, short-petioled, elliptick, obtuse, most entire, smooth; some *small leaves* roundish, inverse-hearted. *Thorns* axillary, opposite, expanding; *points*, bright red. *Peduncles* twin, subterminal, three-flowered; *pedicels*, equal. The whole plant, even the fruit, milky. We have both species of *Carissa* in this province; but they melt, scarce distinguishably, into each other.

The *Pandits* have always brought me this elegant plant, as the *Carcandbu* mentioned by JAYA-DE'VA; but, judging only by the shape and taste of the fruit, they seem to confound it with the RHAMNUS *Jujuba*; and the confusion is increased by the obscurity of the following passage in their best vocabulary:

*Carcandbú, vadart, colí; colam, cuvala pb'énilé,
Sauviram, vadaram, gbóntá*—————.

All agree, that the *neuter* words mean *fruits* only; but some insist, that the *Gbóntá* is a distinct plant thus described in an ancient verse: 'The *gbóntá*, called also *gópaphóntá*, is a tree shaped like the *Vadart*, with a very small fruit, growing only in forests.' For the *gbóntá*, here known by the name of *Sébócul*, my ser-

vants brought me a *RHAMNUS* with *leaves* alternate egg-oblong, three-nerved, obscurely sawed, paler beneath, and most beautifully veined; *floral young leaves* crowded, very long, linear; *prickles* often solitary, sometimes paired, one straight, one curved; a small globular *drupe*, quite black, with a one-celled *nut*: the flowers I never saw perfect; but it seems the *nineteenth* species of LINNÆUS. We have many species of *Rhamnus* in our woods and hedges; some like the *Alaternus*, polygamous by male and hermaphrodite flowers; others, distinguished by various forms and positions of the *prickles* and *leaves*; but the common *Badari* or *Baiar*, is the *Jujube-tree* described by RHEEDE; and by RUMPHIUS called *Indian Apple-tree*. Its *Persian* name is *Conár*, by which it is mentioned in the letters of PIETRO DELLA VALLE, who takes notice of the *soapy froth* procured from its leaves; whence it has in *Sanſcrit* the epithet *p'hénila*, or *frothy*. To the plant the *Arabs* give the name of *Sidr*, and to its fruit, that of *Nabik*; from which, perhaps, *Napeca* has been corrupted. .

27. CARAVIRA:

SYN. *Pratibása*, *Sataprása*, *Cbaṇḍáta*, *Haya-máracá*.

LINN. *NERIUM Oleanḍer*, and other species.

VULG. *Canér*, *Carbír*.

A plant so well known would not have been inserted in this place, if it had not been thought proper to take notice of the remarkable epithet *bayamáraca*, or *horse-killer*; which arose from an opinion still preserved among the *Hindus*, that a horse, unwarily eating the leaves of the *Nerium*, can hardly escape death: most of the species, especially their roots, have strong medicinal, but probably narcotick, powers. The *blue-dying Nerium* grows in woods at a little distance from my garden; and the *Hindu* peasants, who brought it me, called it *Níl*, or *blue*; a proof, that its quality was known to them, as it probably was to their ancestors from time immemorial.

28. SEPTAPERNA, or *seven-leaved*:

SYN. *Vísála-twach*, *Sáradì*, *Vishama-ch' bada*.

VULG. *Cb' bitavanì*, *Cb' bátiyán*, *Cb' batin*, *Cb' háton*.

LINN. *School* ECHITES.

CAL. *Perianth* five-parted, sub-acute, small, villous, permanent; closing round the germ, immediately on the removal of the tube.

COR. One-petaled, funnel-form. *Tube* cylindrick below, prominent above with enclosed anthers, very villous in the throat. *Border* five-parted, shorter than the tube: *divisions* inverse-egged, obtuse, oblique, reflected, waved on the margin. *Nectary*, a circular *undi-*

vided coronet, or rim, terminating the tube, with a short erect villous edge.

STAM. *Filaments* five, cylindrick, very short, in the throat of the tube. *Anthers* heart-arrowed, cleft, pointed, forming a star, visible through the mouth of the tube, with points diverging.

PIST. *Germ* above roundish-egged, very villous, scarce extricable from the calyx enclosing and grasping it. *Style* cylindrick, as long as the tube. *Stigma* two-parted, with parts diverging, placed on an irregular orblet.

PER. *Follicles* two, linear, very long, one-valved.

SEEDS numerous, oblong, compressed with silky pappus pencilled at both ends.

N O T E.

The whole plant, milky. *Stem* dotted with minute whitish tubercles. *Leaves* mostly seven-ed in verticils at short distances, very soft, oblong inverse-egged, some pointed, some obtuse, some end-nicked; some entire, some rather scalloped; with many transverse parallel veins on each side of the axis; rich dark green above, diluted below. *Petiols* furrowed above, smooth and convex beneath, elongated into a strong protuberant nerve continually diminishing and evanescent at the apex. *Stipules* above, erect, acute, set in a coronet round the stem; the verticils of

the leaves answering to the definition of fronds. *Flowers* rather small, greenish white, with a very particular odour less pleasant than that of elder-flowers. *Peduncles*, terminal with two verticils pedicelled umbel-wise, but horizontal. *Pedicels* six, headed, many-flowered; highest verticils similar to those heads, more crowded. *Tree* very large, when full-grown; light and elegant, when young. This plant so greatly resembles the *Pala* of VAN RHEEDE (which has more of the *Nerium* than of the *Tabernaemontana*) that I suspect the genus and species to be the same, with some little variety: that author says, that the *Bráhmens* call it *Santenù*, but his *Nagari* letters make it *Savánu*, and neither of the two words is to be found in *Sanscrit*. With all due respect for PLUMIER and BURMAN, I should call this plant *NERIUM Septaparna*: it is the *Pule* of RUMPHIUS, who enumerates its various *uses* at great length and with great confidence.

29. *ARCAS*

SYN. *Vasuca*, *Asp'bóta*, *Gonárúpa*, *Vicirana*, *Mandára*, *Arcaperna*; and any name of the *Sun*.

VULG. *Aсанд*, *A'nc*.

LINN. *Gigantick ASCLEPIAS*.

Nectaries with two-glanded, compressed, folds, instead of awled *bornlets* at the summit; spi-

rally eared at the base. *Filaments* twisted in the folds of the nectaries. *Antbers* flat, smooth, rather wedge-form. *Styles* near half an inch long, subcylindrick. *Stigmas* expanded. *Flowers* terminal and axillary umbel-fascicled; amethyst-coloured with some darker shades of purple on the petals and nectaries; the starred corpuscle, bright yellow. *Leaves* opposite, heart-oblong, mostly inverse-egged, subtargeted, very rarely stem-clasping, pointed, villous on both sides, hoary beneath with soft down; *petiols* very short, concave and bearded above; with a thickish conical *stipule*. The whole plant filled with caustick milk. A variety of this species has exquisitely delicate milkwhite flowers; it is named *Alarca* or *Pratápasa*, and highly esteemed for its antispasmodick powers. The *Padmárca*, which I have not seen, is said to have small crimson corols: the individual plants, often examined by me, vary considerably in the forms of the leaves and the tops of the nectary.

30. PICHULA;

SYN. *J'hávaca*.

VULG. *J'hau*.

KOEN. *Indian TAMARIX?*

Flowers very small, whitish, with a light purple tinge, crowded on a number of spikes, which

form all together a most elegant panicle. *Stem* generally bent, often straight, and used anciently for arrows by the *Persians*, who call the plant *Gaz*: the celebrated shaft of ISFENDIYA'R was formed of it, as I learned from BAHMEN, who first showed it to me on a bank of the *Ganges*, but asserted, that it was common in *Persia*. The *leaves* are extremely minute, sessile, mostly imbricated. *Calyx* and *corol* as described by LINNÆUS; five filaments considerably longer than the petal; *anthers* lobed, furrowed; *germ* very small; *style*, scarce any; *stigmas* three, revolute, but, to my eyes, hardly feathered.

Nothing can be more beautiful than the appearance of this plant in flower during the rains on the banks of rivers, where it is commonly interwoven with a lovely twining ASCLEPIAS, of which the following description is, I hope, very exact:

31. DUGDHICA': or *Milkplant*;

SYN. *Cshiravi*, *Dugdhica*.

VULG. *Kyirui*, *Dúdbi*, *Dúdb-latá*.

LINN. Esculent *Periploca*.

CAL. One-leaved, five-parted; *divisions* awled, acute, coloured, expanding.

COR. One-petaled, salver-form, starlike; *divisions* five, egged, pointed, fringed.

Nectary double, on a five-cleft base, gibbous

between the clefts, protruded, and pointed above; furrounded with a bright green villous rim: *exterior* five-parted; *divisions* egged, converging, attenuated into daggers; each concave externally, gibbous below the cavity, which is two-parted and wrinkled within. *Interior*, a five-parted corpuscle, lopped above, five-angled, furrounding the fructification.

STAM. *Filaments* scarce any. *Anthers* five, roundish, very minute, set round the summit of the lopped corpuscle.

PIST. *Germes* two, egged, pointed, erect, internally flat. *Styles* none, unless you so call the *points* of the *germes*. *Stigma*, none but the *interior nectary*, unless you consider that as a *common stigma*.

PER. *Follicles* two, oblong; in some, pointed; in others, obtuse; inflated, one-valved.; each containing a one-winged *receptacle*.

SEEDS numerous, roundish, compressed, crowned with pappus.

To each pair of leaves a peduncle mostly two-flowered, often with three, sometimes with five, flowers. *Calyx* reddish. *Corol* white, elegantly marked with purple veins; *fringe*, white, thick; *anthers*, black. *Leaves* linear-awled, pointed, opposite, petioled with one strong nerve; *stipules*, very soft, minute. *Stem* smooth, round, twining; the whole plant abounding with *milk*.

32. LA'NGALI':

SYN. *Saradì, Tóyapippalì, Saculádanì.*VULG. *Cáncbrà, Isbolángolyá.*RHEEDE: *Chéru-vallél?*LINN. NAMA of *Silán.*CAL. *Perianth* one-leaved, five-parted, villous; *divisions*, lanced, pointed, long, permanent.COR. One-petaled, nearly wheeled. *Tube* very short. *Border* five-parted. *Divisions* egged.STAM. *Filaments* five, awled, expanding; from the mouth of the tube, adhering to the divisions of the border by rhomboidal concave bases convergent above. *Anthers* large, arrowed.PIST. *Germ* above, egg-oblong, two-cleft. *Styles* two, azure, funnel-form, diverging almost horizontally. *Stigmas* lopped, open.PER. *Capfule* many-seeded.

SEEDS very minute.

Stem herbaceous, branchy, smooth, pale, creeping. *Leaves* alternate, short-petioled, most entire, lance-oblong, smooth, acutish. *Peduncles* mostly axillary, sometimes terminal, villous, often many-flowered, rarely subumbelled, three-rayed, with *involucres* general and partial. *Corols* bright-blue, or violet; *Stamens* white. The plant is aquatick; and by no means peculiar to *Silán*: I have great

reason, however, to doubt whether it be the *Làngali* of the *Amartucòsh*, which is certainly the *Canchrà* of *Bengal*; for though it was first brought to me by that name, yet my gardener insists, that *Canchrà* is a very different plant, which, on examination, appears to be the *Ascending* JUSSIEUA of LINNÆUS, with leaves *inverse-egged*, *smooth*, and *peduncles shorter*: its fibrous, creeping roots are purplish, *buoys*, white, pointed, solitary; and at the top of the germ fits a *nectary*, composed of five shaggy bodies arched like horse shoes, with external honey-bearing cavities.

33. UMA':

SYN. *Atasi*, *Cshumá*.

VULG. *Tisi*, *Masand*.

LINN. *Most common* LINUM.

CAL. *Perianth* five-leaved. *Leaflets* oblong, acute, imbricated, keeled, fringed minutely, having somewhat reflected at the points.

COR. Small, blue; petals, notched, striated, wavy, reflex, imbricated.

STAM. *Antbers* light-blue, converging, no rudiments of filaments.

PIST. *Germ* large. *Style* pale-blue. *Stigma* simple.

PER. *Capsule* pointed. *Furrowed*.

Root simple.

Stem. Herbaceous, low, erect, furrowed, *knotty?* naked at the base.

Leaves linear, threenerved, alternate crosswise, sessile, smooth, obtuse, reflected, stipuled, *glanded?*

Stipules linear. Q. a minute *gland* at the base.

34. MU' RVA' :

SYN. *Dévi*, *Madburasá*, *Móraiá*, *Téjaní*, *Survá*, *Madhúlicá*, *Madbus'rení*, *Gócarní*, *Píluparní*;

VULG. *Muragà*, *Murabarà*, *Murgábi*.

LINN. *Hyacinthoid*, ALETRIS.

CAL. None.

COR. One-petaled, funnel-form, six-angled.

Tube short, bellied with the germ. *Border* six-parted. *Divisions* lanced; three quite reflected in a circle; three alternatè, deflected, pointed.

STAM. *Filaments* six, awled, as long as the corol, diverging, inserted in the base of the divisions. *Anthers* oblong, incumbent.

PIST. *Germ* inverse-egged, obscurely three-sided, with two or three *honey-bearing* pores on the flattish top. *Style* awled, one-furrowed as long as the stamens. *Stigma* clubbed.

PERICARP and SEEDS not yet inspected.

Root fibrous, tawny, obscurely jointed, stolon-bearing. *Scape* long, columnar, sheathed

with leaves, imbricated from the root; a few sheaths above, straggling. *Leaves* fleshy, channelled, swordform, keeled, terminated with awls, the interior ones longer; mostly arched; variegated with transverse undulating bands of a dark green hue approaching to black. *Raceme* erect, very long; *Flowers*, from three to seven in each fascicle, on very short petiols. *Bracts* linear, minute. *Corols*, pale, pea-green, with a delicate fragrance, resembling that of the *Peruvian* HELIOTROPE; some of the *Sanscrit* names allude to the *honey* of these delicious flowers; but the nectareous pores at the top of the germ are not very distinct: in one copy of the *Amaracōsha* we read *Dhanuṣ'rénī* among the synonyma; and if that word, which means *a series of bows*, be correct, it must allude either to the *arched leaves* or to the *reflected divisions* of the corol. This ALETRIS appears to be a *night-flower*; the raceme being covered, every evening, with fresh blossoms, which fall before sunrise.

From the leaves of this plant, the ancient *Hindus* extricated a very tough elastick thread, called *Maurvī*, of which they made bowstrings, and which, for that reason, was ordained by *MENŪ* to form the sacrificial zone of the *military* class.

35. TARUNI:

SYN. *Sabā, Cumārī.*

VULG. *Gbrīta-cumārī.*

LINN. *Two-ranked ALOE, A Perfoliata, P?*

Flowers racemed, pendulous, subcylindrick, rather incurved. *Bracts*, one to each peduncle, awled, concave, deciduous, pale, with three dark stripes. *Corol* six-parted; three *external divisions*, orange-scarlet; *internal*, yellow, keeled, more fleshy, and more highly coloured in the middle. *Filaments* with a double curvature. *Germ* six-furrowed. *Stigma* simple. *Leaves* awled, two-ranked; the lowest, expanding; sea-green, very fleshy; externally quite convex, edged with soft thorns; variegated on both sides with white spots. VAN RHEEDE exhibits the *true ALOE* by the name of *Cumārī*; but the specimen, brought me by a native gardener, seemed a variety of the *two-ranked*, though melting into the species, which immediately precedes it in LINNÆUS.

36. BACULA:

SYN. *Césāra.*

VULG. *Mūsfarī* or *Mūlafri.*

LINN: MIMUSOPS *Elengi.*

CAL. *Perianth* eight-leaved; *leaflets* egged, acute, permanent; four *interior*, simple; four *exterior*, leathery.

COR. *Petals* sixteen, lanced, expanding; as

long as the *calyx*. *Nectary* eight-leaved; *leaflets* lanced, converging round the *stamen* and *pistil*.

STAM. *Filaments* eight (or from seven to ten), awled, very short, hairy. *Anthers*, oblong, erect.

PIST. *Gerin* above, roundish, villous. *Style* cylindrick. *Stigma* obtuse.

PER. *Drupe* oval, pointed; bright orange-scarlet.

NUT. Oval, wrinkled, flattish and smooth at one edge, broad and two-furrowed at the other.

Flowers agreeably fragrant in the open air, but with too strong a perfume to give pleasure in an apartment: since it must require the imagination of a BURMAN to discover in them a resemblance to the *face* of a man, or of an ape, the genus will, I hope, be called BACULA, by which name it is frequently celebrated in the *Purānas*, and even placed among the flowers of the *Hindu* paradise. *Leaves* alternate, petioled, egg-oblong pointed, smooth. The tree is very ornamental in parks and pleasure-grounds.

37. AS'O'CA:

SYN. *Vanjula*.

CAL. *Perianth* two-leaved, closely embracing the tube.

COR. One-petaled. *Tube* long; cylindrick, subincurved; *mouth* encircled with a nectareous rim. *Border* four-parted, *divisions*, roundish.

STAM. *Filaments* eight, long, coloured, inserted on the rim of the tube. *Anthers* kidney-shaped.

PIST. *Germ* above, oblong, flat. *Style* short, downy. *Stigma* bent, simple.

PER. *Legume* long, compressed at first, then protuberant with the swelling seeds; incurved, strongly veined and margined, sharp-pointed.

SEEDS from two to eight, solid, large, many-shaped, some oblong-roundish, some rhomboidal, some, rather kidney-shaped, mostly thick, some flat.

Leaves egg-oblong-lanced, opposite, mostly five-paired, nerved; long, from four or five to twelve or thirteen inches.

The *number* of stamens varies considerably in the same plant: they are from six or seven to eight or nine; but the regular number seems *eight*, one in the interstices of the corol, and one before the centre of each division. Most of the flowers, indeed, have one abortive stamen, and some only mark its place, but many are perfect; and VAN RHEEDE speaks of *eight* as the constant number: in fact no part of the plant, is

constant. *Flowers* fascicled, fragrant just after sunset and before sunrise, when they are fresh with evening and morning dew; beautifully diversified with tints of orange-scarlet, of pale yellow, and of bright orange, which grows deeper every day, and forms a variety of shades according to the age of each blossom, that opens in the fascicle. The vegetable world scarce exhibits a richer sight than an *Asoca*-tree in full bloom: it is about as high as an ordinary Cherry-tree. A *Bráhmén* informs me, that one species of the *Asoca* is a creeper; and JAYADE'VA gives it the epithet *voluble*: the *Sanscrit* name will, I hope, be retained by botanists, as it perpetually occurs in the old *Indian* poems and in treatises on religious rites.

38. S'AIVA'LA:

SYN. *Janakili. Saivala.*

VULG. *Simár, Sváli, Pátasyála, Sébáli.*

LINN. *Vallisneria?* R.

CAL. *Common Spathe* one-leaved, many-flowered, very long, furrowed, two-cleft at the top; each division end-nicked. *Proper Perianth* three-parted; *divisions*, awled.

COR. *Petals* three, linear, long, expanding, fleshy.

STAM. *Filaments* invariably nine, thread-form. *Antbers* erect, oblong, furrowed.

PIST. *Germ* egged, uneven. *Styles* always

three, short, awled, expanding. *Stigmas* three, simple.

PER. *Capsule* very long, smooth, awled, one-celled, infolded in an angled *Spathe*.

SEEDS very numerous, murexed, in a viscid mucus.

Flowerets from six to fourteen, small. *Scape* compressed, very narrow, fleshy, furrowed in the middle.

Pedicle of the floweret, thread-form, crimson above; proper *perianth*, russet; *petals*, white; *anthers*, deep yellow. *Leaves* swordform, pointed, very narrow, smooth, and soft, about two feet long, crowded, white at the base. *Root* small, fibrous. It flourishes in the ponds at *Crishna-nagar*: the refiners of sugar use it in this province. If this plant be a *Vallisneria*, I have been so unfortunate as never to have seen a female plant, nor fewer than nine stamens in one blossom out of more than a hundred, which I carefully examined.

39. PU'TICARAJA:

SYN. *Pracirya*, *Putica*, *Calimāraca*.

VULG. *Nātācaranja*.

LINN: *GUILANDINA Bonduccella*.

The species of this genus vary in a singular manner: on several plants, with the oblong leaflets and *double prickles* of the *Bonduccella*, I could see only *male* flowers, as RHEEDE has

described them ; they were yellow, with an aromattick fragrance. . Others, with similar *leaves* and *prickles*, were clearly *polygamous*, and the flowers had the following character :

MALE.

CAL. *Perianth* one-leaved, salver-form, downy ;
Border five-parted, with equal, oblong *divisions*.

COR. *Petals* five, wedge-form, obtusely notched at the top ; four equal, erect, the fifth, depressed.

STAM. *Filaments* ten, awled, inserted in the calyx, villous, very unequal in length. *Anthems* oblong, furrowed, incumbent.

HERMAPHRODITE.

Calyx, *Corol*, and *Stamens*, as before.

PIST. *Germ* oblong, villous. *Style* cylindrick, longer than the filaments. *Stigma* simple.

PER. and **SEEDS** well described by LINNÆUS.

Flowers yellow ; the depressed petal variegated with red specks. *Bracts* three-fold, roundish, pointed. *Spikes*, set with floral leaflets, lanced, four-fold, reflected.

40. SOBHA'NJANA :

SYN. *Sigru*, *Ticshna*, *Gandhaca*, *Acshtra*, *Mochaca*.

VULG. *Sajjana*, *Moranga*.

LINN. *Guilandina* Moringa.

CAL. *Perianth* one-leaved. *Tube* short, unequal, gibbous. *Border* five-parted. *Divisions* oblong-lanced, subequal; first deflected, then revolute; coloured below, white above.

COR. *Petals* five, inserted into the calyx, resembling a boat-form flower.

Wing-like, two, inverse-egged, clawed, expanding.

Awning-like, two, inverse-egged, erect; *claws*, shorter.

Keel-like, one, oblong, concave; enclosing the fructification; beyond it, spatuled; longer than the *wing*-petals.

STAM. *Filaments* five, fertile; three, bent over the pistil: two shorter, inserted into the claws of the middle petals. *Anthers* twin, rather mooned, obtuse, incumbent. *Five* sterile (often *four* only) alternate with the fertile, shorter; their bases villous.

PIST. *Germ* oblong, coloured, villous; below it a nectar-bearing gland. *Style*, shorter than the stamen, rather downy, curved, thicker above. *Stigma*, simple.

PER. *Legume* very long, slender, wreathed, pointed, three-sided, channelled, prominent with seeds, one-celled.

SEEDS many, winged, three-sided.

TREE very high; *branches* in an extreme degree

light and beautiful, rich with clustering flowers. *Stem exuding* a red gum. *Leaves* mostly thrice-feathered with an odd one; *leaflets* some inverse-egged, some egged, some oval, minutely end-nicked. *Raceme-panicles* mostly axillary. In perfect flowers the whole calyx is quite deflected, counterfeiting five petals; whence VAN RHEEDE made it a part of the corol. *Corols* delicately odorous; milk-white, but the two central erect petals beautifully tinged with pink. The *root* answers all the purposes of our horse-radish, both for the table and for medicine: the fruit and blossoms are dressed in *caris*. In hundreds of its flowers, examined by me with attention, five stamens and a pistil were invariably perfect: indeed, it is possible, that they may be only the female hermaphrodites, and that the males have ten perfect stamens with pistils abortive; but no such flowers have been discovered by me after a most diligent search.

There is another species or variety, called MEDHU SI'GRU, that is Honey-S'gru; a word intended to be expressed on VAN RHEEDE's plate in *Nagari* letters: its vulgar name is *Muna*, or *Raeta Sajjana*, because its flowers or wood are of a redder hue.

LINNÆUS refers to Mrs. BLACKWELL, who represents this plant, by the name of *Balanus*.

Myrepfica, as the celebrated *Ben*, properly *Bán* of the *Arabian* physicians and poets.

41. CO'VIDA'RA:

SYN. *Cánchanátra*, *Chamarica*, *Cuddála*, *Yugapatra*.

VULG. *Cacbnár*, *Rásta cánchan*.

LINN. *Variegated* BAUHINIA.

CAL. *Perianth* one-leaved, obscurely five-cleft, deciduous.

COR. *Petals* five, eggcd, clawed, expanded, wavy; one more distant, more beautiful, striated.

STAM. *Filaments* ten, unequally connected at the base; five, shorter. *Anthems*, double, incumbent.

PIST. *Germ* above, oblong. *Style* incurved. *Stigma* simple, ascending.

PER. *Legume* flattish, long, pointed, mostly five-celled.

SEEDS mostly five; compressed, wrinkled, roundish.

LEAVES rather hearted, two-lobed; some with rounded, some with pointed, lobes. *Flowers* chiefly purplish and rose-coloured, fragrant; the sweet and beautiful buds are eaten by the natives in their savory messes. We have seen many species and varieties of this charming plant; one had racemed flowers, with petals equal, expanding, lanced, exquisitely

white, with a rose-coloured stripe from the base of each to its centre; *anthers*, four only, fertile; six, much shorter, sterile; a second had three fertile, and seven very short, barren; another had light purple corols, with no more than five filaments, three longer, coloured, curved in a line of beauty. A noble *Climbing BAUHINIA* was lately sent from *Népál*; with flowers racemed, cream-coloured; *style*, pink; *germ*, villous; *stamens* three filaments, with rudiments of two more; *stem*, downy, four-furrowed, often spirally. *Tendrils* opposite, below the leaves. *Leaves* two-lobed, extremely large: it is a stout climber up the highest *ARUNDO Vénu*. The *Sanfrit* name *Mandúra* is erroneously applied to this plant in the first volume of VAN RHEEDE.

42. CAPITT'HA:

SYN. *Grábin*, *Dadbitt'ha*, *Manmat'ha*, *Dad-bip'hala*, *Pushpap'hala*, *Dantas'at'ha*.

VULG. *Cat'h-bél*.

KOEN. *Crateva*, *Valanga*.

CAL. *Perianth* five-parted, minute, deciduous; *divisions* expanded, acute.

COR. *Petals* five, equal, oblong, reflected.

STAM. *Filaments* ten, very short; with a small *gland* between each pair, awled, furrowed.

Anthers, thick, five times as long as the filaments; furrowed, coloured, erect-expanding.

PIST. *Germ* roundish, girt with a downy coronet. *Style* cylindrick, short. *Stigma* simple.

PER. *Berry* large, spheroidal, rugged, often warted, externally, netted within; many-seeded.

SEEDS oblong-roundish, flat, woolly, nestling in five parcels, affixed by long threads to the branchy receptacles.

Flowers axillary, mostly toward the unarmed extremity of the branch. *Divisions* of the *Perianth*, with pink tips; *petals*, pale; *anthers*, crimson, or covered with bright yellow pollen. *Fruit* extremely acid before its maturity; when ripe, filled with dark brown pulp agreeably subacid. *Leaves* jointedly feathered with an odd one; *leaflets* five, seven, or nine; small, glossy, very dark on one side, inverse-hearted, obtusely-notched, dotted round the margin with pellucid specks, very strongly flavoured and scented like anise. *Thorns* long, sharp, solitary, ascending, nearly cross-armed, axillary, three or four petioles to one thorn. KLEINHOFF limits the height of the tree to thirty feet, but we have young trees forty or fifty feet high; and at *Bandell* there is a full-grown *Capitt'ba* equal in size to the

true *Bilva*, from its fancied resemblance to which the vulgar name has been taken: when the trees flourish, the air around them breathes the odour of anise both from the leaves and the blossoms; and I cannot help mentioning a singular fact, which may, indeed, have been purely accidental: not a single flower, out of hundreds examined by me, had both *perfect germs*, and anthers *visibly fertile*, while others, on the same tree, and at the same time, had their anthers profusely covered with *pollen*, but scarce any *styles*, and *germs* to all appearance *abortive*.

43. CUVERACA:

SYN. *Tunna*, *Tuni*, *Cac'ba*, *Cantalaca*, *Cuni*, *Nandivric'ha*.

VULG. *T'ini*, *Tún*; absurdly, *Viláyatì Nim*.

LINN. Between CEDRELA and SWIETENIA.

CAL. *Perianth* one-leaved, five-cleft, minute, deciduous; *divisions* roundish, concave, villous, expanding.

COR. Rather belled. *Petals* five, inverse-egged, obtuse, concave, erect, white with a greenish tint, *three* exterior lapping over the *two* others. *Nectary* short, five-parted; *divisions* roundish, orange-scarlet, bright and concave at the insertion of the *stamens*, rather downy.

STAM. *Filaments* five; inserted on the *divi-*

fions of the nectary, awled, somewhat converging, nearly as long as the style. *Antbers* doubled, some three-parted, curved, incumbent.

PIST. *Germ* egged, obscurely five-lobed. *Style* awled, erect, rather longer than the corol. *Stigma*, broad-headed, flat, bright, green, circular, starred.

PER. *Capsule* egged, five-celled, woody, gaping at the base. *Receptacle* five-angled.

SEEDS imbricated, winged.

Leaves feathered, scarce ever with an odd one; *pairs* from six to twelve; *petioles*, gibbous at their insertion, channelled on one side, convex and smooth on the other. *Stipules* thick, short, roundish, *leaflets* oblong-lanced, pointed, waved, veined, nerve on one side. *Panicles* large, diffuse, consisting of compound racemes. *Nectaries* yielding a fine yellow dye. *Wood* light, in colour like *Mahagoni*.

44. NICHULA:

SYN. *Ambuja*, *Ijjala*.

VULG. *Hijala*, *Badia*, *Jyuli*.

CAL. *Perianth* one-leaved, belled, fleshy, downy, coloured, permanent, five-parted; *divisions* erect, pointed.

COA. Five-petaled; *petals* egged, short-pointed, revolute, downy within and without.

STAM. *Filaments* ten, five mostly shorter; in-

ferted in the bell of the calyx; awled, villous.

Antbers erect, oblong, furrowed.

PIST. *Germ* egg-oblong, very villous. *Style* thread-form, curved. *Stigma* headed, with five obtuse corners.

PER. *Drupe* subglobose.

Nut scabrous, convex on one side, angled on the other.

Leaves feathered; *pairs*, from five to nine; *leaflets* oblong, daggered, notched. *Calyx* pale pink. *Corol* darker pink without, bright yellow within. *Cyme* terminal, spreading.

45. ATIMUCTA:

SYN. *Pun'draca*, *Vásanti*, *Mádhavílatá*.

VULG. *Mádhavílatá*.

LINN. Bengal BANISTERIA.

RHEEDE: *Dewenda*. 6. H. M. tab. 59.

CAL. *Perianth* one-leaved, five-parted, permanent; *divisions*, coloured, oblong-oval, obtuse; between two of them, a rigid glossy honey-bearing *tubercle*, hearted, acute.

COR. Five-petaled, imitating a boatform corol: *wings*, two petals, conjoined back to back, involving the *nectary*, and retaining the honey.

Awning, large concave, more beautifully coloured. *Keel*, two petals, less than the wings, but similar. All five, roundish, elegantly fringed, with reflected margins, and short oblong claws.

STEM. *Filaments* ten; one, longer. *Anthers* oblong, thickish, furrowed.

PIST. *Germes* two, or three, coalesced. *Style* one, threadform, incurved, shorter than the longest filament. *Stigma*, simple.

PER. *Capsules* two or three, mostly two, coalesced back to back; each keeled, and extended into three oblong membranous *wings*, the lateral shorter than the central.

SEEDS roundish, solitary.

Racemes axillary. *Flowers* delicately fragrant; white, with a shade of pink: the large petal, supported by the nectarous tubercle, shaded internally with bright yellow and pale red. *Bracts* linear; *Wings* of the seed, light brown; the long ones rusted. *Leaves* opposite, egg-oblong, pointed. *Petioles* short. *Stipules* linear, soft, three or four to each petiol. Two *glands* at the base of each leaf. *Stem* pale brown, ringed at the insertion of the leaves, downy.

This was the favourite plant of SACONTALA, which she very justly called the *Delight of the Woods*; for the beauty, and fragrance of its flowers give them a title to all the praises, which CALIDA'S and JAYADEVA bestow on them: it is a gigantic and luxuriant climber; but, when it meets with nothing to grasp, it assumes the form of a sturdy tree, the highest branches

of which display, however, in the air their natural flexibility and inclination to climb. The two names *Vásantì* and *Mádhavì* indicate a vernal flower; but I have seen an *Atimuṣṭa* rich both in blossoms and fruit on the first of January.

46. A'MRĀ'TACA:

SYN. *Pitana*, *Capitana*.

VULG. *A'mdí*, pronounced *A'mrá*, or *A'mlá*.

LINN. SPONDIAS *Myrobalan* β. or a new species.

The natural character as in LINNÆUS. Leaves feathered with an odd one; leaflets mostly five-paired, egg-oblong, pointed, margined, veined, nerved; common petiol. smooth, gibbous at the base. Flowers raceme-panicled, yellowish white. Fruit agreeably acid; thence used in cookery. VAN RHEEDE calls it *Ambadò* or *Ambalam*; and, as he describes it with five or six styles, it is wonderful, that HILL should have supposed it a *Chrysobalanus*.

47. HE'MASA'GARA; or the Sea of Gold.

VULG. *Himśāgar*.

LINN. Jagged-leaved COTYLEDON.

CAL. Perianth four-cleft; divisions acute.

COR. One-petaled: Tube, four-angled; larger at the base; border four-parted; divisions, egged, acute. Nectary, one: minute concave scale at the base of each germ.

STAM. Filaments eight, adhering to the tube;

four, just emerging from its mouth; *four*, alternate, shorter. *Anthers.* erect, small, furrowed.

PIST. *Germes* four, conical. *Styles*, one from each germ, awled, longer than the filaments. *Stigmas* simple.

PER. *Capsules* four, oblong, pointed, bellied, one-valved, bursting longitudinally within.

SEEDS numerous, minute.

Panicles terminal. *Flowers* of the brightest gold-colour. *Leaves* thick, succulent, jagged, dull sea-green. *Stem* jointed, bending, in part recumbent. This plant flowers for many months annually in *Bengal*: in one blossom out of many, the numbers were *ten* and *five*; but the filaments alternately long and short.

48. **MADHU'CA:**

SYN. *Gurapushpa*, *Madbudruma*, *Vānaprast'ba*, *Madbusht'bīla*, *Madbu*.

VULG. *Maüyāla*, *Mahuyā*, *Mabwā*.

LINN. Longleaved **BASSIA**.

49. **CAHLA'RA:***

SYN. *Saugandhica*, or *Sweet-scented*.

VULG. *Sundhī-bālā*, or *Sundhī-bālā-nālī*.

LINN. **NYMPHÆA** *Lotos*.

* According to the sacred Grammar, this word was written *Cahlhāra*, and pronounced as *Callara* would be in ancient British. When the flowers are red, the plant is called *Hal-laca* and *Racīa sandhaca*.

Calyx as in the genus.

COR. *Petals* fifteen, ~~marked~~, rather pointed and keeled; the exterior series green without, imitating an interior calyx.

STAM. *Filaments* more than forty; below flat, broad; above narrow, channelled within, smooth without; the outer series erect, the inner somewhat converging. *Anthems* awled, erect; some coloured like the petals.

PIST. *Germ* large, orbicular, flat at the top; with many (often seventeen) furrows externally, between which arise as many processes, converging toward the *stigma*: the disk, marked with as many furrowed rays from the center, uniting on the margin with the converging processes. *Stigma*, roundish, rather compressed, sessile in the center of the disk, permanent.

PER. *Berry*, in the form of the *germ* expanded, with sixteen or seventeen cells.

SEEDS very numerous, minute, roundish. *Flowers* beautifully azure; when full blown, more diluted; less fragrant than the red or rose-coloured, but with a delicate scent. *Leaves* radical, very large, subtargeted, hearted, deeply scollop-toothed. On one side dark purple, reticulated; on the other, dull green, smooth. *Petioles* very smooth and long, tubular. The seeds are eaten, as well as the bulb of the

root, called *Sálúca*; a name applied by RHEEDE to the whole plant, through the word *Camala*, which belongs to another *Linnean* species of *Nymphæa*, be clearly engraved on his plate in *Nágarì* letters. There is a variety of this species with leaves purplish on both sides; flowers dark crimson, calycine petals richly coloured internally, and anthers flat, furrowed, adhering to the top of the filaments: the petals are more than fifteen, less pointed and broader than the blue, with little odour.

The true Lotos of *Egypt* is the NYMPHÆA *Nilúfer*, which in *Sanscrit* has the following names or epithets: PADMA, *Nalina*, *Aravinda*, *Mabotpala*, *Camala*, *Cusébhaya*, *Sabastrapatra*, *Sárasa*, *Pancéruba*, *Támarasa*, *Sarasruba*, *Rájíva*, *Visaprasúna*, *Puskara*, *Ambhóruba*, *Satapatra*. The new-blown flowers of the rose-coloured PADMA have a most agreeable fragrance; the white and yellow have less odour: the blue, I am told, is a native of *Cashmír* and *Persia*.

50. CHAMPACA:

SYN. *Chámpéya*, *Hémapushpaca*.

VULG. *Champac*, *Champá*.

LINN. *Michelia*.

The delineation of this charming and celebrated plant, exhibited by VAN RHEEDE, is very correct, but rather on too large a scale:

no material change can be made in its *natural character* given by LINNÆUS; but, from an attentive examination of his two *species*, I suspect them to be *varieties* only, and am certain, that his trivial names are merely different ways of expressing the same word. The strong aromatick scent of the gold-coloured *Champac* is thought offensive to the bees, who are never seen on its blossoms; but their elegant appearance on the black hair of the *Indian* women is mentioned by RUMPHIUS; and both facts have supplied the *Sanscrit* poets with elegant allusions. Of the wild *Champac*, the leaves are lanced or lance-oblong; the three leaflets of the *calyx*, green, oval, concave; the *petals* constantly six, cream-coloured, fleshy, concave, with little scent; the three *exterior*, inverse-egged; the three *interior*, more narrow, shorter pointed, converging; the *anthers* clubbed, closely set round the base of the imbricated *germs*, and with them forming a cone; the *stigmas*, minute, jagged.

Both Mr. MARSDEN and RUMPHIUS mention the blue *Champac* as a rare flower highly prized in *Sumatra* and *Java*; but I should have suspected, that they meant the *KÆMPFERIA Bhûchampac*, if the *Dutch* naturalist had not asserted, that the plant, which bore it, was a tree resembling the *Champaca* with yellow

bloffoms: he probably never had seen it; and the *Bráhmens* of this province infist, that it flowers only in paradise.

51. DE'VADARU:

SYN. *Sacrapáddapa*, *Páribbhadraca*; *Bbadradáru*,
Dubcilima, *Pítadáru*, *Dáru*, *Púticásh't'ba*.

VULG. *Dé'vadár*.

LINN. *Most lofty* UNÓNÁ.

52. PARNA'SA:

SYN. *Tulasi*, *Cat'binjara*, *Cut'béraca*, *Vrindá*.

VULG. *Tulosi*, *Tulsi*.

LINN. *Holy* OCYUM?

The *Natural Character* as in LINNÆUS.

See 10 H. M. p. 173.

It is wonderful, that RHEEDE has exhibited no delineation of a shrub so highly venerated by the *Hindus*, who have given one of its names to a *sacred* grove of their *Parnassus* on the banks of the *Yamunà*: he describes it, however, in general terms, as resembling another of his *Tolassis* (for so he writes the word, though *Tulasi* be clearly intended by his *Nágarì* letters); and adds, that it is the only species reputed holy, and dedicated to the God VISHNU. I should, consequently, have taken it for the *Holy* OCYNUM of LINNÆUS, if its odour, of which that species is said to be nearly destitute, had not been very aromatick and grateful; but it is more

probably a variety of that species, than of the *Small-flowered*, which resembles it a little in fragrance: whatever be its *Linneæan* appellation, if it have any, the following are the only remarks that I have yet had leisure to make on it.

STEM one or two feet high, mostly incurved above; knotty, and rough, below. *Branchlets* cross-armed, channelled. *Leaves* opposite, rather small, egged, pointed, acutely sawed; purple veined, beneath; dark, above. *Petioles* dark purple, downy. *Racemes* terminal; *Flowers* verticilled threefold, or fivefold, cross-armed; *verticils* from seven to fourteen; *Peduncles* dark purple, channelled, villous; *bracts* sessile, roundish, concave, reflected. *Calyx*, with its upper lip orbicular, deeply concave externally. *Corol* bluish purple. The whole plant has a dusky purplish hue approaching to *black*, and thence perhaps, like the large *black bee* of this country, it is held sacred to CRISHNA; though a fable, perfectly *Ovidian*, be told in the *Purânas* concerning the metamorphosis of the nymph TULASI, who was beloved by the pastoral God, into the shrub, which has since borne her name: it may not be improper to add, that the *White* OCYMU is in *Sanscrit* called *Arjaca*.

53. PA'TALI:

SYN. *Pâtala*, *Amôghà*, *Câchast' bâlî*, *P'balî-*

rubà, Crîşnavrîntà, Cuvérácşî. Some read *Móghá* and *Cáláşt'hált.*

VULG. *Páralá, Pàrali, Páruł.*

LINN. BIGNONIA. *Chelonoides?*

CAL. *Perianth* one-leaved, belled, villous, withering, obscurely five-angled from the points of the divisions, five-parted; *divisions*, roundish, pointed, the two lowest most distant.

COR. One-petaled, belled. *Tube* very short; *throat*, oblong-belled, gibbous. *Border* five-parted; the *two higher* divisions reflected, each minutely toothed; convex externally; the *three lower* divisions, above, expanded; below, ribbed, furrowed, very villous. *Palate* nearly closing the throat. *Nectary*, a prominent rim, surrounding the *germ*, obscurely five-parted.

STAM. *Filaments* four or *five*, incurved, inserted below the *upper* division of the border, shorter than the corol, with the *rudiment* of a fifth or *sixth*, between two shorter than the rest. *Antlers*, two-cleft, incumbent at obtuse angles.

PIST. *Germ* oblong-conical. *Style* thread-form, as long as the stamens. *Stigma* headed with two folds, often closed by viscosity.

PÉR. *Capsule* one-celled, two-valved, twelve inches long at a medium, and one inch thick; rounded, four-sided, pointed, incurved, rather

contorted, diminishing at both ends, dotted with ashy specks, here and there slightly prominent, striated; two stripes broader, very dark, at right angles with the valves.

REC. A series of hard, broadish, woody rings, closely strung on two wiry central threads.

SEEDS numerous, *forty-eight* on an average, three-angled, inserted by one angle in cavities between the rings of the receptacle, into which they are closely pressed by parallel ribs in the four sides of the capsule; winged on the two other angles with long subpellucid membranes, imbricated along the sides of the receptacle.

Tree rather large. *Stem* scabrous.

Branchlets cross-armed, yellowish green, speckled with small white lines. *Leaves* feathered with an odd one; two or three paired, petioled. *Leaflets* opposite, egged, pointed, most entire, downy on both sides, veined; older leaflets roughish, margined, netted and paler below, daggered. *Petioles* tubercled, gibbous at the base; of the paired leaflets, very short; of the odd one, longer. *Stipules*, linear. *Flowers* panicled; *pedicels* opposite, mostly three-flowered; an odd flower sessile between the two terminal pedicels. *Calycol* externally, light purple above, brownish purple below, hairy at its convexity; inter-

nally, dark yellow below, amethystine above; exquisitely fragrant, preferred by the bees to all other flowers, and compared by the poets to the quiver of CA'MA'DEVA, or the God of Love. The whole plant, except the *root* and *stem*, very downy and viscid. The fruit can scarce be called a *siliqua*, since the seeds are no where affixed to the futures; but their *wings* indicate the genus, which might properly have been named *Pterispermum*: they are very hard, but enclose a white sweet kernel; and their light-coloured summits with three dark points, give them the appearance of winged insects. Before I saw the fruit of this lovely plant, I suspected it to be the *BIGNONIA Chelonoides*, which VAN RHEEDE calls *Pádri*; and I conceived that barbarous word to be a corruption of *Pátali*: but the pericarp of the true *Pátali*, and the form of the seeds, differ so much from the *Pádri*, that we can hardly consider them as *varieties* of the same species; although the specifick character exhibited in the Supplement to LINNÆUS, corresponds very nearly with both plants.

The *Pátali* blossoms early in the spring. before a leaf appears on the tree, but the fruit is not ripe till the following winter.

54. GO'CANT'ACA:

SYN. *Palancaśhá, Icshugandhá, S'wadanshtrá,*
Swáducant'aca, Gócsuráca, Vanas'rnigáta.

VULG. *Gócsurá, Gókyura, Culpí.*

RHEEDE: *Bahél Chulli.*

LINN. Long-leaved *BARLERIA?*

CAL. *Perianth* one-leaved, hairy, five-toothed;
upper tooth, long, incurved, pointed; two
under, and two lateral, shorter, subequal,
 winged with subpellucid membranes.

COR. One-petaled, two-lipped. *Tube* flattish,
 curved, protuberant at the mouth. *Upper* lip
 erect, two-parted, reflected at the sides, con-
 cave in the middle, enclosing the fructifica-
 tion. *Under* lip three-parted, reflected, with
 two parallel, callous, hispid bodies on the
 center of its convexity; *Divisions*, inverse-
 hearted. •

STAM. *Filaments* four, inserted in the mouth
 of the tube; connected at their base, then
 separated into pairs and circling round the
 pistil; each pair united below, consisting of a
long and a *short* filament. *Anthers* arrowed.

PIST. *Germ* awled; pointed, furrowed, with
 prominent seedlets, sitting on a glandular pe-
 dicel. *Style* thread-form, longer than the
 stamens, incurved above them. *Stigma* sim-
 ple.

PER.

Flowers verticilled; *Corols* blue, or bright vio-

let; center of the *under* lip yellow. *Verticils*, each surrounded by six *thorns*, very long, diverging, coloured above; under which are the *leaves*, alike verticilled, lanced, acutely sawed, pubescent, interspersed with bristles. *Stem* jointed, flattish, hairy, reddish; furrowed on both sides; broader at the joints, or above the verticils; *farrows* alternate.

55. SINDHUCA:

SYN. *Sindhuvara*, *Indrasurisa*, *Nirvandi*, *Indranica*.

VULG. *Nisindā*.

LINN. Three-leaved VITEX; or *Negundo*?

CAL. *Perianth* five-toothed, beneath, permanent; *toothlets* acute, subequal.

COR. One-petaled, grinning; *Tube* funnel-shaped, internally villous; *border* two-lipped; *upper* lip broad, concave, more deeply coloured; *under* lip four-cleft; *divisions*, acute, similar.

STAM. *Filaments* four; *two* shorter, adhering to the *Tube*, villous at the base. *Antbers* half-mooned.

PIST. *Germ* globular; *Style* thread-form; *Stigma* two-parted, pointed, reflex.

PER. *Berry* (unless it be the coat of a naked seed) roundish, very hard; black, obscurely furrowed, with the calyx closely adhering.

SEEDS from one to four? I never saw more than one, as RHEEDE has well described it.

FLOWERS raceme-panicled; purplish or dark blue without, greyish within, small. *Racemes* mostly terminal; some pedicels, many-flowered.

STEM distinctly four-sided; *sides* channelled; jointed, bending. *Stipules* egged, scaly, thickish, close. *Branchlets* cross-armed.

The tube of the corol is covered internally with a tangle of silvery silky down, exquisitely beautiful; more dense below the upper lip.

This charming shrub, which seems to delight in watery places, rises to the height of ten or twelve, and sometimes of twenty, feet; exhibiting a most elegant appearance, with rich racemes or panicles lightly dispersed on the summit of its branchlets. On a comparison of two engravings in RUMPHIUS, and as many in VAN RHEEDE, and of the descriptions in both works, I am nearly persuaded that the SINDHUCA or *Nirgandi*, is the VITEX *Negundo* of LINNÆUS; but it certainly resembles the *three-leaved* VITEX in its leaves, which are opposite, egged, acute, petioled; above mostly *threed*; below mostly *fived*; paler beneath; rarely sawed and very slightly, but generally entire: they are very aromack, and pillows are stuffed with them, to remove a cold in the head and a head-ach

occasioned by it. These, I presume, are the shrubs, which BONTRUŞ calls *Lagondi*, and which he seems to consider as a panacea.

56. CA'RAVE'LLA:

SYN. *Cátillaca*, *Sushavi*.

VULG. Beng. *Hurburiya*; Hind. *Carailá*.

LINN. Five-leaved *Cleome*?

CAL. *Perianth* four-leaved, gaping at the base, then erect; *leaflets* egg-oblong, concave, downy; deciduous.

COR. Cross-form. *Petals* four, expanding, *claws* long; *folds* wrinkled.

Nectary, from six to twelve roundish, perforated *glands*, girding the gibbous *receptacle*.

STAM. *Filaments* six, threadform, hardly differing in length, inserted on a pedicel below the germ. *Anthers* erect, pointed, furrowed.

PIST. *Germ* erect, linear, long, downy, sitting on the produced pedicel. *Style* very short. *Stigma* headed, flat, circular.

PER. *Siliqua* one-celled, two-valved, spindle-shaped, with protuberant seeds; *crowned with the permanent style*.

SEEDS very many, roundish, nodding. *Receptacles* linear, often more than two.

The whole plant, most distinctly one piece. *Root* whitish, with scattered capillary fibres. *Stem* herbaceous, pale green, in parts purple, hairy, cross-armed, produced into a long *raceme*

crowded at the summit. *Branchlets*, similar to the stem, leaf-bearing; similar, but smaller leaves rising also from their axils. *Leaves* fixed, roundish-rhomboidal, notched, pointed, hairy, dark green, the lower pairs respectively equal, the odd one much larger, strongly ribbed with processes from the petiol-branches, conjoined by the basis of the ribs, in the form of a starlet; each ray, whitish and furrowed within. *Calyx* green. *Petals* white. *Anthers* covered with gold-coloured pollen. *Pedicels* purplish. *Braets* threed, similar to the cauline leaves. The sensible qualities of this herb seem to promise great antispasmodick virtues; it has a scent much resembling *assa fætida*, but comparatively delicate and extremely refreshing. For pronouncing this *Gleome* the *Caravella* of the ancient *Indians*, I have only the authority of RHEEDE, who has exactly written that word in *Malabar* letters: as to his *Bráhmanical* name *Tilóni*, my vocabularies have nothing more like it than *Tilaca*, to which *Cshuraca* and *Srímat* are the only synonyma.

57. NA'GACE'SARA:

SYN. Chámpéya, Céfara; Cáñchana, or any other name of *gold*.

VULG. Nagasar.

LINN. *Iron* MESUA:

To the botanical descriptions of this delight-

ful plant, I need only add, that the tree is one of the most beautiful on earth, and that the delicious odour of its blossoms justly gives them a place in the quiver of CA'MADE'VA. In the poem, called *Naijbadda*, there is a wild, but elegant, couplet, where the poet compares the white of the *Nágacésara*, from which the bees were scattering the pollen of the numerous gold-coloured anthers, to an alabaster wheel, on which CA'MA was whetting his arrows, while sparks of fire were dispersed in every direction. Surely, the genuine appellation of an *Indian* plant should be substituted for the corrupted name of a *Syrian* physician who could never have seen it; and, if any trivial name were necessary to distinguish a single species, a more absurd one than *iron* could not possibly have been selected for a flower with petals like silver and anthers like gold.

58. S'A'LMALI:

SYN. *Pich'bilá, Púraní, Móchá, St'biráyush.*

VULG. *Semel.*

LIN. Seven-leaved BOMBAX.

59. S'ANA':

SYN. *S'anápushpicá, Gbánt'áravá.*

VULG. *San*, pronounced *Sun*.

LINN. Rushy *Crotalaria*.

CAL. *Perianth* one-leaved, villous, permanent; short below, gibbous on both sides, with

minute linear tracts. *Upper* teeth, two, lanced, pressing the banner; *lower* tooth, boat-form, concave, two-gashed in the middle, cohering above and below; sheathing the keel, rather shorter than it; pointed.

COR. Boat-form.

Banner, broad, large, acute, rather hearted, with two dark callosities at the base, and with compressed sides, mostly involving the other parts: a dark line from base to point.

Wings inverse-egg-oblong, with dark callous bodies at their axils, two-thirds of the banner in length.

Keel flattened at the point, nearly closed all round to include the fructification, very gibbous below to receive the germ.

STAM. *Filaments* ten, coalesced, cleft behind, two-parted below; alternately short with linear furrowed erect, and long with roundish, *anthers*.

PIST. *Germ* rather awled, flat, villous, at a right angle with the ascending, cylindrick, downy *Style*. *Stigma* pubescent, concave, open, somewhat lipped.

PER. *Legume* pedicelled, short, velvety, turgid, one-celled, two-valved.

SEEDS, from one or two to twelve or more, round-kidney-form, compressed.

Flowers deep yellow. *Leaves* alternate, lanced,

paler beneath, keeled; *petiols* very short; *stipules*, minute, roundish; villous. *Stem* striated.

Threads, called *flavitraca*, from their supposed purity, have been made of *Bana* from time immemorial: they are mentioned in the laws of MENU.

The *retuse-leaved* CROTALARIA, which VAN RHEEDE by mistake calls *Schama Pusi*, is cultivated, I believe, for the same purpose. RUMPHIUS had been truly informed, that threads for nets were made from this genus in *Bengal*: but he suspected the information to be erroneous, and thought that the persons who conveyed it, had confounded the *Crotalaria* with the *Capsular* CORCHORUS: strong ropes and canvas are made of its macerated bark.

The *Jangal-san*, or a variety of the *watery* CROTALARIA, has very beautiful flowers, with a greenish white banner, purple-striped, wings, bright violet: *stem*, four-angled, and four-winged; *leaves* egged, obtuse, acute at the base, curled at the edges, downy; *stipules*, two, declining, mooned, if you chuse to call them so, but irregular, and acutely pointed. In all the *Indian* species, a difference of soil and culture occasion varieties in the flower and fructification.

60. JAYANTI':

SYN. *Jayá, Tercárì, Nádéyì, Vaijayanticá.*

VULG. *Jainti, Jábì*; some say, *Aranì.*

RHEEDE. *Kedangu.*

LINN. *ÆSCHYNOMENE Sesban.*

CAL. *Perianth* one-leaved, rather belled, five-cleft; *toothlets*, awled, erect, subequal, more distant on each side of the awning; permanent.

COR. Boat-form.

Awning very broad, rather longer than the wings, inverse-hearted, quite reflected so as to touch the calyx; waved on the margin; furrowed at the base internally, with two converging hornlets, fronting the aperture of the keel, gibbous below, awled upwards, acute, erect, within the wings. *Wings* oblong, clawed, narrower above, obtuse, spurred below, embracing the keel and the hornlets of the awning.

Keel compressed, enclosing the fructification, inflected nearly in a right angle, gashed below and above the flexure; each division hatchet-form; beautifully striated.

STAM. *Filaments* simple and nine-cleft, inflected like the keel; the *simple* one curved at the base. *Antlers* oblong, roundish.

PIST. *Germ* compressed, linear, erect as high as the flexure of the filaments with visible

partitions. *Style* nearly at a right angle with the germ, awled, inflected like the stamen. *Stigma* rather headed, somewhat cleft, pellucid.

PER. *Legume* very long, slender, wreathed when ripe, smooth at the valves, but with seeds rather protuberant, many-parted, terminated with a hard sharp point.

SEEDS oblong, rather kidney-shaped, smooth, slightly affixed to the future, solitary.

Stem arboresecent, rather knotty. *Leaves* feathered, pairs from nine to fifteen, or more, often alternate; *leaflets* oblong, end-nicked, some with an acute point, dark green above, paler beneath, with a gibbosity at the insertion of the petioles; sleeping, or collapsing, towards night. *Racemes* axillary; *pedicels* with a double curvature or line of beauty; *flowers* small, six or seven; varying in colour; in some plants, wholly yellow; in others, with a blackish-purple awning yellow within, and dark yellow wings tipped with brown; in some with an awning of the richest orange-scarlet externally, and internally of a bright-yellow; *wings* yellow, of different shades; and a keel pale below, with an exquisite changeable light purple above, striated in elegant curves. The whole plant is inexpressibly beautiful, especially in the colour of

the buds and leaves, and the grace of all the curves, for there is no proper angle in any part of it. The *Brabmens* hold it sacred: VAN RHEEDE says, that they call it *Cananga*; but I never met with that word in *Sanscrit*: it has parts like an *Hedysarum*, and the air of a *Cyrisus*.

GI. PALA'SA:

SYN. *Cins'uca*, *Parna*, *Vútapót'ba*.

VULG. *Palás*, *Plás*, *Dhác*.

KOEN. *Butea frondosa*.

CAL. *Perianth* belled, two-lipped; *upper* lip broader, obscurely end-nicked; *under* lip three-cleft, downy; permanent.

COR. Boat-form.

Awning reflected, hearted, downy beneath; sometimes, pointed.

Wings lanced, ascending, narrower than the keel.

Keel, as long as the wings, two-parted below, half-mooned, ascending.

STAM. *Filaments* nine and one, ascending, regularly curved. *Anthers* linear, erect.

PIST. *Germ* pedicelled, oblongish, downy.

Style awled, about as long as the *stamens*. *Stigma* small, minutely cleft.

PER. *Legume* pedicelled, oblong, compressed, depending.

SEED one, toward the apex of the pericarp, flat, smooth, oval-roundish.

Flowers raceme-fascicled, large, red, or *French* scarlet, silvered with down.

Leaves threed, petioled; *leaflets* entire, stipuled, large, rhomboïdal; the *lateral* ones unequally divided; the *terminal* one, larger, equally bisected; brightly verdant. A perfect description of the *arborescent* and the *twining* PALA'SA has been exhibited in the last volume, with a full account of its beautiful red gum; but the same plant is here shortly described from the life, because few trees are considered by the *Hindus* as more venerable and holy. The *Palâsa* is named with honour in the *Vêdas*, in the laws of MENV, and in *Sanscrit* poems, both sacred and popular; it gave its name to the memorable *plain* called *Plâsséy* by the vulgar, but properly *Palâsi*; and, on every account, it must be hoped, that this noble plant will retain its ancient and classical appellation. A grove of *Palâsas* was formerly the principal ornament of *Crishna-nagar*, where we still see the trunk of an aged tree near six feet in circumference. This genus, as far as we can judge from written descriptions, seems allied to the *Nissolia*.

62. CARANJACA:

SYN. *Cbirabiwa*, *NaEtamâla*, *Caraja*.

VULG. *Caranja*.

RHEEDE: *Caranschi*, 6 H. M. tab. 3.

CAL. *Perianth* one-leaved, cup-form, obscurely five-toothed, or scalloped, beaked.

COR. Boat-form.

Awning broad, end-nicked, striated, rather spirally inflected, with two callosities at its base.

Wings oblong, of the same length with the awning.

Keel rather shorter, gibbous below, two-parted.

STAM. *Filaments* nine in one body, gaping at the base, and discovering a tenth close to the style. *Antbers* egged, erect.

PIST. *Germ* above, oblong, downy. *Style* incurved at the top. *Stigma* rather headed.

PER. *Legume* mostly one-seeded, thick, rounded above, flattish, beaked below.

SEED oblong-roundish, rather kidney-form.

Racemes axillary. *Awning* pale; *wings* violet.

Leaves feathered with an odd one, mostly two-paired; *leaflets* egg-oblong, pointed, keeled, short-petioled; brownish on one side, pale on the other. *Common petiol* gibbous at its base. The seed yields an oil supposed to be a cure for the most inveterate scabies.

63. ARJUNA:

SYN. *Nadisarja*, *Virataru*, *Indradru*, *Cacubha*.

VULG. *Jaral*.

RHEEDE. *Adamboe*; 4 H. M. tab. 20, 21, 22.

LINN. Beautiful MÜNCHHAUSIA?

KOEN. *Queen's-flower* LAGERSTROEMIA?

CAL. *Perianth* one-leaved, six-cleft, top-shaped, furrowed, with protuberant ridges, downy, permanent; *divisions*, coloured, with points reflected.

COR. *Petals* six, roundish, somewhat notched, expanding, wavy; *claws* short, inserted in the calyx.

STAM. *Filaments* coloured, numerous, capillary shortish, obscurely conjoined in six parcels, one to each *division* of the calyx; *Anthers* thick, incumbent, roundish, kidney-shaped.

PIST. *Germ* above, egged. *Style* coloured, longish, thread-form, incurved. *Stigma* obtuse.

PER. *Capsule* egged, six-celled, six-valved.

SEEDS numerous.

Panicles, racem^{ed}, terminal, erect. *Flowers* violet or light purple, in the highest degree beautiful. *Leaves* alternate, leathery, some opposite, egg-oblong, stipuled, most entire, short-petioled, smooth, paler beneath. *Branches* round and smooth: I have seen a single panicle, waving near the summit of the tree, covered with blossoms, and as large as a milk-maid's garland. The *timber* is used for the building of small boats.

64. VANDA':

SYN. *Vřicřhádani*, *Vřicřharubá*, *řřivanticá*.

VULG. *Bándà, Persárà, Perafárà.*

These names, like the *Linnæan*, are applicable to all *parasite* plants.

LINN. Retuse-leaved EPIDENDRUM?

CAL. *Spàthes*, minute, fragging.

COR. *Petals* five, diverging, oval-oblong, obtuse, wavy; the two lowest larger; the three highest, equal; bent towards the nectary.

Nectary central, rigid: *Mouth* gaping oblique: *Upper lip* shorter, three-parted, with a polished honey-cup; *under lip*, concave in the middle, keeled above, with two smaller cavities below; two processes at the *base*, incurved, hollow, oval-pointed, converging, honey-bearing.

STAM. *Filaments* very short. *Antbers* round, flattish, margined, covered with a lid, easily deciduous from the *upper lip* of the nectary.

PIST. *Germ* beneath, long, ribbed, contorted with curves of opposite flexure. *Style* very short, adhering to the *upper lip*. *Stigma* simple.

PER. *Capsule*, oblong-conick, wreathed, fix-keeled, each with two smaller keels, three-celled, crowned with the dry corol.

SEEDS innumerable like fine dust, affixed to the *Receptacle* with extremely fine hairs, which become thick wool.

Scapes incurved, solitary, from the cavity of the leaf, at most seven-flowered: pedicels alter-

nate. *Petals* milk-white externally, transparent; brown within, yellow-spotted. *Upper* lip of the nectary snow-white; *under* lip, rich purple or light crimson striated at the base, with a bright yellow gland, as it seems, on each process. The flowers gratefully fragrant and exquisitely beautiful, looking as if composed of shells or made of enamel; crisp, elastick, viscid internally. *Leaves* sheathing, opposite, equally curved, rather fleshy, sword-form, retuse in two ways at the summit, with one acute point. *Roots* fibrous, smooth, flexible; shooting even from the top of the leaves. This lovely plant attaches itself chiefly to the highest *Amras* and *Bilvas*; but it is an air-plant, and lives in a pot without earth or water: its leaves are excavated upwards, to catch and retain dew. It most resembles the first and second *Maravaras* of VAN RHEEDE in its roots, leaves, and fruit, but rather differs from them in its inflorescence. Since the parasites are distinguished by the trees, on which they most commonly grow, this may in *Sanfrit* be called *Amuravandà*; and the name *Baculavandà* should be applied to the *Loranthus*; while the *Viscum* of the Oak, I am told, is named *Vandà* simply and transcendently, the *Vandàca*, or Oak, being held sacred.

65. A'MALACI':

SYN. *Tishyap'balá*, *Amritá*, *Vayast' bá*.

VULG.

LINN. PHYLLANTHUS *Emblicá*

66. GAJÄPIPPALI':

SYN. *Carippalli*, *Capiballi*, *Coluballi*, *Sréyasi*, *Vas'ira*. Some add, *Chavica* or *Chavya*, but that is named; in the *Amaracósh*, as a distinct plant, vulgarly *Chava* or *Chayi*.

VULG. *Pippal-j'hanca*, *Maidab*.

Male Flowers.

CAL. *Common Perianth* four-leaved; *leaflets*, roundish, concave; the two exterior, opposite, smaller; containing from *eight* to *fourteen* florets. *Partial calyx*, none.

COR. None. *Nectary*, many yellow glands on the pedicel of the filaments.

STAM. *Filaments* from eight to eighteen in each floret, connected by a short villous pedicel, threadform, very hairy. *Antbers* large, netted, irregular, inflated, containing the pollen.

PIST. Rudiments of a *germ* and *style*, withering.

Female Flowers.

CAL. *Common Perianth* as in the male, but smaller; containing from ten to twelve florets. *Partial calyx*, none; unless you assume the corol.

COR. Many-petaled, belled. *Petals* erect lance-linear, fleshy, covered within, and externally with white hairs. *Nectary*, yellow glands sprinkling the receptacle.

PIST. *Germ* oval. *Style* cylindrick; curved at the base. *Stigma* headed.

PER. *Berry* globular, one-seeded.

SEED, spherical, smooth.

Flowers umbelled, yellow from their anthers.

Leaves mostly oblong-lanced, but remarkably varying in shape, alternate. Both flowers and fruit have an agreeable scent of lemon-peel; and the berries, as a native gardener informs me, are used as a spice or condiment: it was from him that I learned the *Sanſcrit* name of the plant; but as *balli* means a creeper, and as the *Pippal-jhancā* is a tree perfectly able to stand without support, I suspect in some degree the accuracy of his information; though I cannot account for his using a *Sanſcrit* word without being led to it, unless he had acquired at least traditional knowledge. It might be referred, from the imperfect mixed flower, to the twenty-third class.

67. SA'CŌTA'CA:

SYN.

VULG. *Sy'ura*, or *Syaur'a*.

KOEN. *Roughleaved Trophis?*

MALE.

CAL. *Common* imbricated; *leaflets* six or eight, egged, acute, small, expanding, withering, containing generally from five to seven flowers. *Partial* four-parted; *divisions* egged, expanded, villous.

GO. None, unless you assume the calyx.

STAM. *Filaments* mostly four, (in some, three; in one, five) awled, fleshy, rather compressed, spreading over the divisions of the calyx, and adhering to them at the point. *Antbers* double, folded.

The *buds* elastick, springing open on a touch.

FEMALE.

CAL. Four-parted; *divisions* egged, concave, pointed, permanent, propped by two small *bracts*; unless you call them the calyx.

COR. None; unless you give the *calyx* that name.

PIST. *Germ* roundish. *Style* very short, cylindrical. *Stigma* long, two-parted, permanent.

PER. *Berry* one-seeded, navelled, smooth, somewhat flattened.

SEED globular, arilled.

LEAVES various, some inverse-egged, some oblong, some oval, pointed, irregularly notched, alternate (some opposite), crowded, crisp, very rough veined, and paler beneath, smother

and dark above. *Berry*, deep yellow. The *Pandits* having only observed the *male* plant, insist that it bears no fruit. *Female* flowers axillary, from one to four or five in an axil.

68. VIRANA:

SYN. *Viratara*.

VULG. *Béná, Gándár, Cata*.

RETZ. *Muricated* ANDROPOGON.

ROXB. *Aromatick* ANDROPOGON.

The root of this useful plant, which CA'LIDA's calls *us'ira*, has nine other names thus arranged in a *Sanscrit* verse:

*Abbaya, Nalada, Sévya, Amrínála, Jalás'aya,
Lámajjaca, Laghulaya, Avadába, Istacápat'ba.*

It will be sufficient to remark, that *Jalás'aya* means *aquatick*, and that *Avadába* implies a power of *allaying feverish heat*; for which purpose the root was brought by GAUTAMI' to her pupil SÁCONTAL'A: the slender fibres of it, which we know here by the name of *C'bas* or *Khajkbas*, are most agreeably aromatick, when tolerably fresh; and among the innocent luxuries of this climate, we may assign the first rank to the coolness and fragrance, which the large hurdles or screens in which they are interwoven, impart to the hottest air, by the means of water dashed through them; while the strong southern wind spreads the scent before it, and the quick evaporation contributes to cool the atmo-

sphere. Having never seen the fresh plant, I guessed from the *name* in VAN RHEEDE, and from the *thin roots*, that it was the *Asiatick ACORUS*; but a drawing of Dr. ROXBURGH's has convinced me, that I was mistaken.

69. SAMI' :

SYN. *Sa-tu-p'balá, Sivá.*

VULG. *Sáén, Bábul.*

LINN. *Farnesian MIMOSA.*

Thorns double, white, black-pointed, stipular.

Leaves twice-feathered; first, in three or four pairs; then in pairs from fourteen to sixteen.

Spikes globular, with short peduncles; *yellow*, perfuming the woods and roads with a rich aromatick odour. A minute *gland* on the petiols below the leaflets. *Wood*, extremely hard, used by the *Bráhmens* to kindle their sacred fire, by rubbing two pieces of it together, when it is of a proper age and sufficiently dried. *Gum* semi-pellucid. *Legumes* rather spindle-shaped, but irregular, curved, acutely pointed, or daggered, with twelve or fourteen seeds rather prominent, gummy within. *Seeds* roundish, compressed. The gum of this valuable plant is more transparent than that of the *Nilotic* or *Arabian* species; which the *Arabs* call *Um-mû'lybiláh*, or Mother of Serpents, and the *Persians*, by an easy corruption, *Mughbilàn*.

SAMI'RA means a small *Samà*; but I cannot learn to what species that diminutive form is applied.

LAJJA'RU (properly *Lajjálu*) signifies *bashful*, or *sensitive*, and appears to be the word engraved on a plate in the *Malabar Garden*; though VAN RHEEDE pronounces it LAURI, there can be no doubt, that it is the *swimming MIMOSA*, with *sensitive* leaves, root enclosed in a spongy cylinder, and flowerets with only ten filaments. LINNÆUS, by a mere slip, has referred to this plant as his *Dwarf ÆSCHYNOMENE*; which we frequently meet with in *India*.—See 9 H. M. tab. 20. The epithet *Lajjálu*, is given by the *Pandits* to the *Modest MIMOSA*.

70. CHANDRACA:

SYN. *Chandrapuskepa*.

VULG. *Ch'bèta Chénd*, or *Mocnlet*.

RHEEDE: *Sjouanna Amelpodi*, 6 H. M. t. 47.

LINN. *Serpent* OPHIOXYLUM.

CAL. *Perianth*, five-parted, small, coloured, erect, permanent: *divisions*, egged, acutish.

COR. *Petal*, one. *Tube* very long in proportion; jointed near the middle, gibbous from the enclosed anthers; above them, rather funnel-form. *Border* five-parted; *divisions*, inverse-egged, wreathed.

PIST. *Germ* above, roundish. *Style* thread-

form. *Stigma* irregularly headed; with a circular pellucid base, or *nectary*, extremely viscid.

PER. *Berry* mostly twinned, often single, roundish, smooth, minutely pointed, one-seeded.

SEED on one side flattish, or concave; on the other, convex.

Flowers fascicled, *Braets* minute, egged, pointed, coloured. *Tube* of the corol, light purple; *border*, finall, milkwhite. *Calyx*, first pale pink, then bright carmine. *Petioles*, narrow-winged. *Leaves* oblong-oval, pointed, nerved, dark and glossy above; mostly three-fold, sometimes paired, often four-fold near the summit; *margins* wavy. Few shrubs in the world are more elegant than the *Cbandra*, especially when the vivid carmine of the *Perianth* is contrasted not only with the milkwhite corol, but with the rich green *berries*, which at the same time embellish the fascicle: the mature berries are black, and their pulp light purple. The *Bengal* peasants assure me, as the natives of *Malabar* had informed RHEEDE, that the root of this plant seldom fails to cure animals bitten by snakes, or stung by scorpions; and, if it be the plant, supposed to assist the *Nacula*, or VIVERRA *Ibuncumon*, in his battles with ser-

pents, its *nine* synonyma have been strung together in the following distich :

Náculi, Surasá, Rásná, Sugandhá, Gandbanáculi, &

Náculéshá, Bhujangáshí, Cháhatricá, Suvahá, nava.

The vulgar name, however, of the ichneumon-plant is *Ráfan*, and its fourth *Sanscrit* appellation signifies *well-scented*; a quality which an ichneumon alone could apply to the *Ophioxylum*; since it has a strong, and rather a fetid, odour: the *fifth* and *sixth* epithets, indeed, seem to imply that its scent is agreeable to the *Nacula*; and the *seventh* (according to the comment on the *Amaracósh*), that it is offensive to snakes. It is asserted by some, that the *Ráfan* is no other than the Rough *Indian* *ACHYRANIHES*, and by others, that it is one of the *Indian* *ARISTOLOCHIAS*. From respect to *LINNÆUS*, I leave this genus in his *mixed* class; but neither my eyes, nor far better eyes than mine, have been able to discover its male flowers; and it must be confessed, that all the descriptions of the *Ophioxylum*, by *RUMPHIUS*, *BURMAN*, and the great botanist himself, abound with erroneous references, and unaccountable oversights.

71. PIPPALA:

SYN. *Bódbi-druma*, *Cbála-dala'*, *Cunjarás'anas*,
Anwat'tba.

VULG. *Pippal*.

LINN. *Holy FICUS*: but the three following are also thought *boly*. Fruit small, round, axillary, sessile, mostly twin. Leaves heart-ed, scalloped, glossy, daggered; petiols very long; whence it is called *chaladala*, or the tree *with tremulous leaves*.

72. UDUMBARA:

SYN. *Jantu-p'hala*, *Tajnyánga*, *Hémadugdbaca*.

VULG. *Dumbar*.

LINN. *Racemed FICUS*.

Fruit peduncled, top-shape, navelled, racemed. Leaves egg-oblong, pointed, some hearted, obscurely sawed, veined, rough above, netted beneath. VAN RHEEDE has changed the *Sanfcrít* name into *Roembadoe*: it is true, as he says, that minute *ants* are hatched in the ripe fruit, whence it is named *Jantu-p'hala*; and the *Pandits* compare it to the *Mundane Egg*.

73. PLACSHA:

SYN. *Játi*, *Parcatí*.

VULG. *Pácari*, *Pácar*.

LINN. *Indian FICUS* citron-leaved; but all four are *Indian*.

Fruit sessile, small, mostly twin, crowded, whitish.

Leaves oblong, hearted, pointed, with very long slender petioles.

74. VATA:

SYN. *Nyagrôdha*, *Bahupât*.

VULG. *Ber*.

LINN. *Bengal Ficus*; but all are found in this province, and none peculiar to it.

Fruit roundish, blood-red, navelled, mostly twin, sessile. *Calyx* three-leaved, imbricated.

Leaves some hearted, mostly egged, obtuse, broadish, most entire, *petioles* thick, short; branches radicating.

The *Sanscrit* name is given also to the very large *Ficus Indica*, with radicating branches, and to some other varieties of that species. VAN RHEEDE has by mistake transferred the name *Afwatt'ba* to the *Placsha*, which is never so called.

75. CARACA:

SYN. *Bhauma*, *Ch'hatradca*.

VULG. '.

LINN. *FUNGUS Agarick*.

This and the *Phallus* are the only fungi, which I have yet seen in *India*: the ancient *Hindus* held the fungus in such detestation, that YAMA, a legislator, supposed now to be the

judge of departed spirits, declares “ those, who
 “ eat mushrooms, whether springing from the
 “ ground or growing on a tree, fully equal in
 “ guilt to the slayers of *Bráhmens*, and the most
 “ despicable of all deadly sinners.”

76. TA'LA:

SYN. *Trīnarájan*.

VULG. *Tál, Palmeira*.

LINN. BORASSUS.

This magnificent palm is justly entitled the king of its order, which the *Hindus* call *trīna druma*, or grass trees. VAN RHEEDE mentions the bluish gelatinous, pellucid substance of the young *seeds*, which, in the hot season, is cooling, and rather agreeable to the taste; but the liquor extracted from the tree, is the most seducing and pernicious of intoxicating vegetable juices: when just drawn, it is as pleasant as *Pouhon* water fresh from the spring, and almost equal to the best mild *Champagne*. From this liquor, according to RHEEDE, sugar is extracted; and it would be happy for these provinces, if it were always applied to so innocent a purpose.

77. NA'RICE'LA:

SYN. *Lángalin*.

VULG. *Nárgil, Nárijl*.

LINN. *Nut-bearing Cocos*.

Of a palm so well known to *Europeans*, little more needs be mentioned than the true *Asiatick*

name: the water of the young fruit is neither so copious, nor so transparent and refreshing, in *Bengal*, as in the isle of *Hinzuan*, where the natives, who use the unripe nuts in their cookery, take extreme care of the trees.

78. GUVÁCA:

SYN. *Gbónt'á*, *Púga*, *Cramuca*, *Capura*.

VULG. *Supyári*.

LINN. ARECA *Catechu*.

The trivial name of this beautiful palm having been occasioned by a gross error, it must necessarily be changed; and *Guváca* should be substituted in its place. The inspissated juice of the *MIMOSA C'badira* being vulgarly known by the name of *Cat'b*, that vulgar name has been changed by *Europeans* into *Catechu*; and because it is chewed with thin slices of the *Udvéga*, or *Areca-nut*, a species of this palm has been distinguished by the same ridiculous corruption,